ENGINEERING NEWS-RECORD

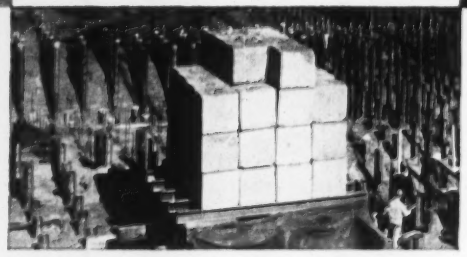
Big diggings: 37 million cubic yards p. 40

A McGRAW-HILL PUBLICATION

E B POWER GS
UNIVERSITY MICROFILMS
313 N 1 ST
ANN ARBOR MICH

Huge Memphis Power Plant to Rest on 7,000 HEL-COR Pile Shells

Armco HEL-COR Pile Shell being driven by the Cobi Pneumatic Mandrel System to supply a firm foundation for a mammoth power plant in Memphis, Tennessee.



A 100-ton test load is being applied to a driven HEL-COR Pile Shell. All deflections from tests were well below the maximum allowable.

The City of Memphis, Tennessee, through their Light, Gas and Water Division, has started construction of what is reputed to be the world's largest municipal power plant. Supporting this $121-million structure will be 7,000 Armco HEL-COR® Pile Shells, totalling 410,000 feet in length.

The Armco HEL-COR Pile Shells are 12¼ inches in diameter, 16 gage, and supplied in 60-foot lengths. For watertightness, the pile shells were continuously welded at the helical seams. Pile boots were added to the penetrating end.

Four rigs using the Cobi Pneumatic Mandrel operated in the 22-foot deep excavation. After driving, reinforcing rods were added. Then the piles were filled with 4000-pound concrete. Finally, a 5-foot thick concrete slab capped all the piles.

Random piles were tested with a 100-ton load. Specifications limited net settlement to one one-hundredth inch per ton of test load, or a total of one inch. Maximum net settlement was only 3/16-inch.

Construction schedule calls for first unit completion by October, 1958.

* * *

Armco HEL-COR Pile Shell is one of more than 30 Armco products for engineering construction in municipal, industrial, highway and railway applications. For details on these products, write us. Armco Drainage & Metal Products, Inc., 5407 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

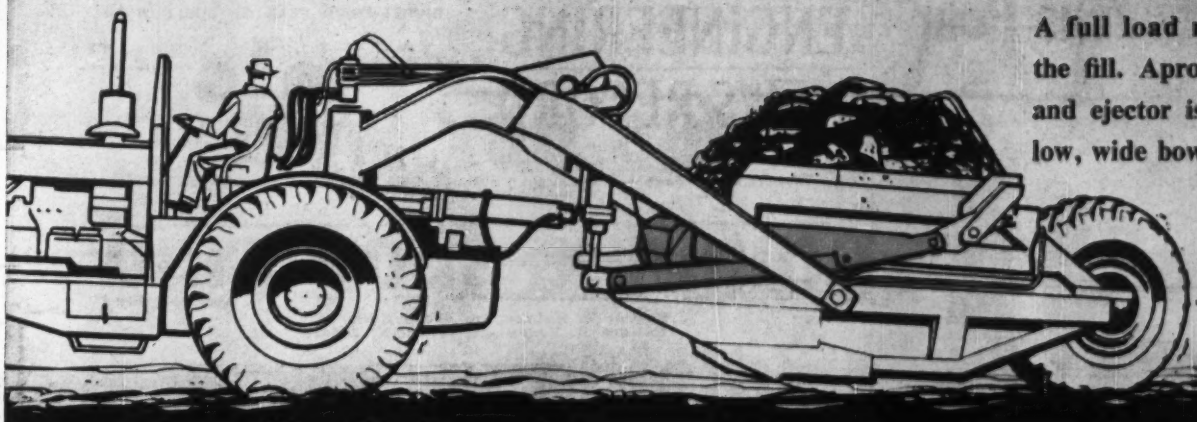
Consulting Engineers
Burns & Roe, Inc., New York City

Contractors
J. A. Jones Construction Co., Charlotte, N. C.
Foundation Contractor

C. L. Guild Construction Co., East Providence, R. I.
Piling Contractor

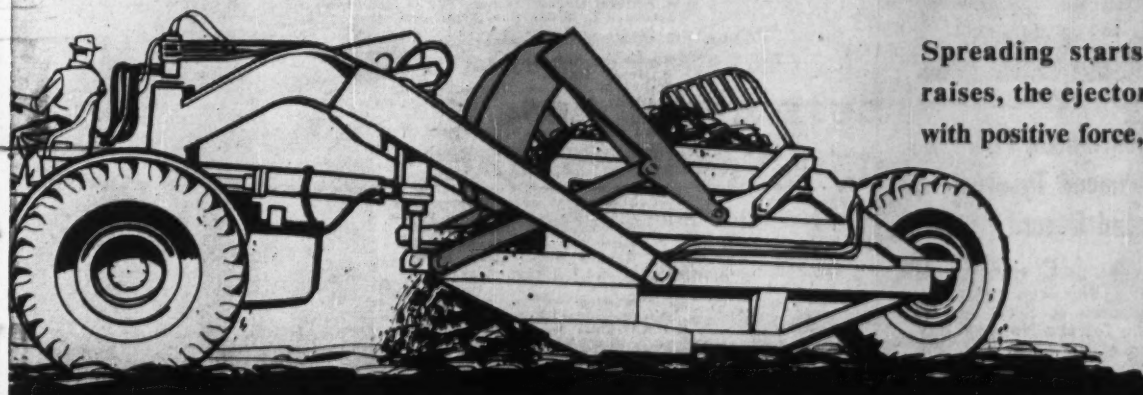
ARMCO®

Armco Construction Products



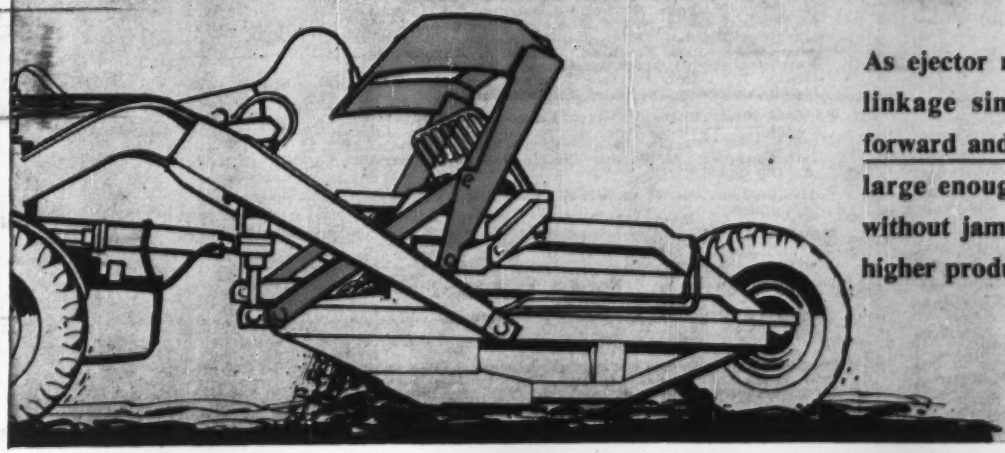
A full load moves on to the fill. Apron is closed, and ejector is at rear of low, wide bowl.

How Allis-Chalmers' patented 3-point scraper linkage



Spreading starts. As the apron raises, the ejector moves forward with positive force, accurate control.

assures fast, clean, controlled spreading of any material

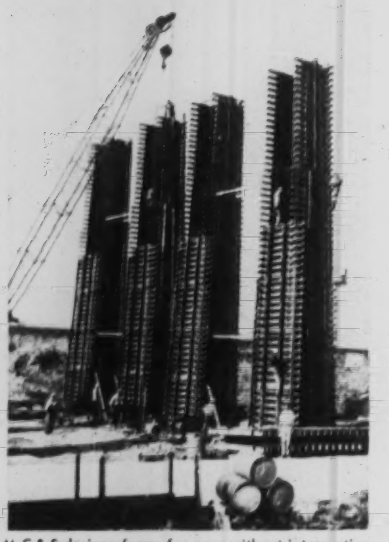


As ejector moves toward cutting edge, linkage simultaneously moves apron forward and upward, providing opening large enough to let any load fall free without jamming. Result: faster cycles, higher production, more profit!

Only your nearby Allis-Chalmers dealer can offer you this important advantage. See it demonstrated now . . . on either motor or pull-type scrapers. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

Continuous Pour



M-C & S designs forms for pour without interruption

99 ft. Continuous Pour –Using Richmond Tyscrus– Believed Record

What is thought to be the highest continuous pour in the area was made by Merritt-Chapman & Scott on its pier construction for the Newark Bay Bridge. For each of the 57 piers, forms were designed for a 10′ liquid head and were set to the full height of the pour. Richmond Tyscrus were used throughout; 123 1″ 4-strut Richmond Tyscrus holding the highest placement – 99′ 9⅜″. Concrete was poured to the maximum design strength of tie rods and forms, and every column went up without incident.

RICHMOND 4-STRUT TYSCRU

For speeding all types of concrete form work, the extra safety margin of Richmond Tyscrus counts heavily. Strength of Richmond Tys far exceeds their published load. For instance, rigid performance tests show that 1″ 4-strut Richmond Tyscrus (published safe load strength 24,000 lbs.)—identical with those used on the Newark Bay Bridge—actually test out at 38,000 lbs.

Hangers, Screed Chairs, Lagstuds and all Richmond equipment are made with the same professional attention to the contractor's needs as are Richmond Tyscrus. Write for the 1956 Richmond Catalogue which details Richmond products and their many uses. It can save *you* time and money on your next job. Address:—RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Avenue, Brooklyn 8, N. Y., or 315 South 4th Street, St. Joseph, Mo.

ENGINEERING NEWS-RECORD

EIGHTY-THIRD YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600;
Washington - REpublic 7-6630

Waldo G. Bowman, Editor

Highways, Airports—Transportation

Eugene E. Halmos, Jr., *Senior Editor*
Edward M. Young, Jr., Joseph N. Todaro

Buildings, Bridges—Structures

Frederick S. Merritt, *Senior Editor*
James B. Sullivan, John P. Mahoney

Rivers, Sanitation—Water Use

Arthur J. Fox, Jr., *Senior Editor*
Howard Jacoby, Marc Leggiero

Finance, Labor—Management

Clyde C. Henning, *Associate Editor*
Charles J. Harding, Robert J. Stinson

Regional Editors

J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy, Presentation—Production

Stanley C. Jensen
Barbara Lamb
Harry W. Jensen, *Presentation*
Philip J. Horn, Jr.
Evelyn Peruzio, *Makeup*
John C. Greenough, *Printing*

Statistics, Prices, Costs—Business News

Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marion Sciorra
Diane Tartaglia, Mary Nolan
James Webber, *Economics*
Ruth Carlson, Marie Roessler
Evelyn Huber, Jean Namias

Editorial Research and Indexing

Helen Rich
Eva Gierat, Rene Hay, Patricia Witschger
Marianne Stern, Ruth Solomon, Marie Bellon

Consulting Editors: **Van Tuyl Boughton,** *New York*
Nathan A. Bowers, *San Francisco*

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Sam J. Justice, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Morton A. Reichek, V. Craig Richter, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureau: Cleveland—1510 Hanna Bldg., Cleveland 15, William G. Meldrum, Michelle M. Perry; **Detroit**—856 Penobscot Bldg., Detroit 26, Donald MacDonald, Chief, Nancy Moore; **Pacific Coast**—68 Post Street, San Francisco 4—Margaret Ralston, Chief, Jenness Keene, Sue Johnson, 1125 West 6th Ave., Los Angeles 17—John K. Shinn, Michael J. Murphy; **Seattle**—6040 Fifth Ave., N. E., Ray Bloomberg; **Southeastern**—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Southwestern**—901 Vaughn Bldg., Dallas, Kemp Anderson, Jr., Chief, Lorraine Smith.

Foreign News Bureaus: New York—John Wilhelm, Editor; **London**—William J. Coughlin; **Paris**—Robert E. Farrell; **Rio de Janeiro**—Peter Weaver; **Mexico City**—Jack Kearney; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Dan Kurzman; **Melbourne**—Alicja Grobtuch. Correspondents in 56 cities throughout the world.

Correspondents: In 77 principal cities in the U.S. and possessions and the Dominion of Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 159, No. 5, AUGUST 1, 1957

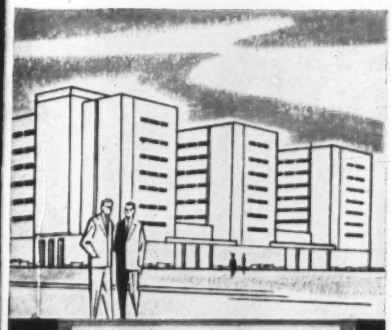
Published weekly by McGraw Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change of address. **Executive, Editorial, Advertising and Circulation Offices. McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20.00 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A. Title registered in U.S. Patent Office.

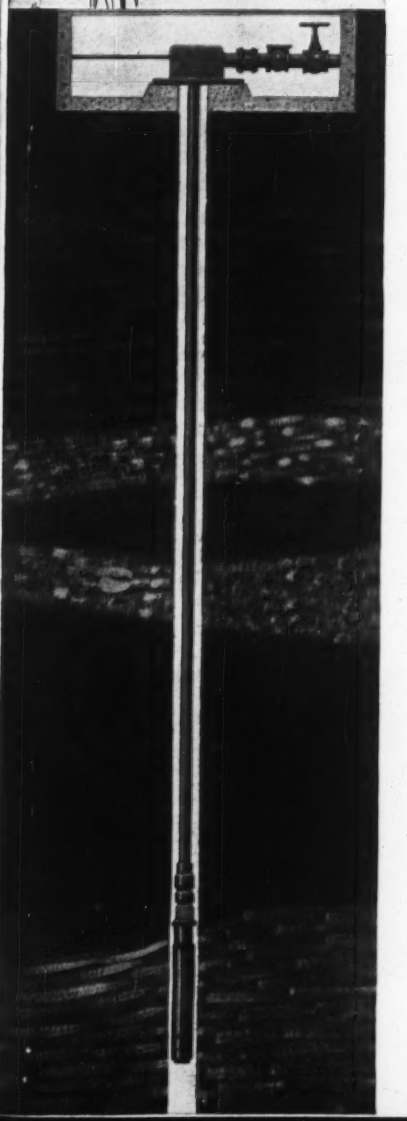
© Copyrighted 1957 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

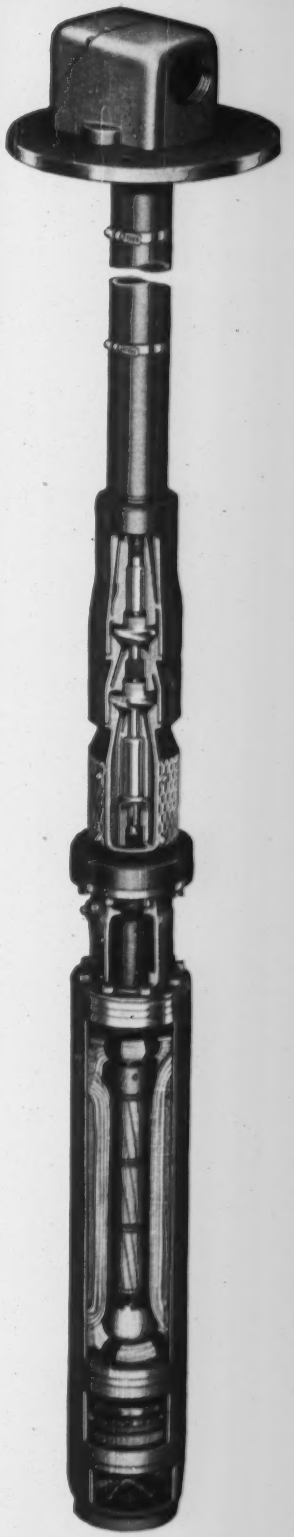
SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Now you can bury your pumping problems







FAIRBANKS-MORSE
Water-Lubricated Submersible Pump

Now you can have all the advantages of a submersible pump, plus time- and performance-tested Fairbanks-Morse features.

Fairbanks-Morse submersible pumps permit well location anywhere that a well can be drilled. No unsightly installations, no costly pump housing. Nothing—absolutely nothing—need show above ground. These pumps submerged in the well below water level are practically soundless and require no line shafts, packing boxes or lubrication devices. Hence, wearing parts needing maintenance are reduced to a minimum. A single moving assembly does all the work.

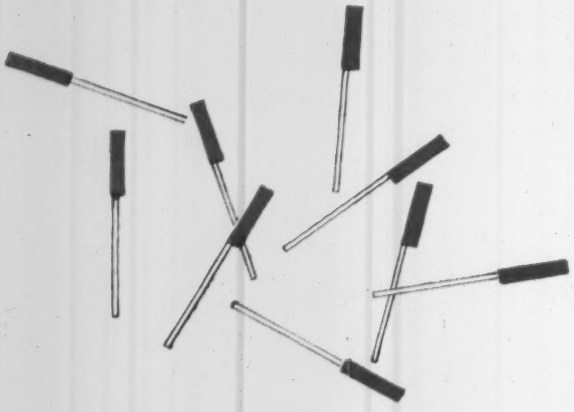
Installation is faster and more economical. The Fairbanks-Morse motor, with lifetime Copperspun rotor cooled by water and lubricated by water, gives full motor output. The well-known Fairbanks-Morse or Pomona pump bowls are combined with these wet stator motors to produce unbeatable pumping units covering a wide range of requirements as to volume, pressure, and setting depth.

For industry or community service you can place your water service trust in the F-M submersible. Contact your Fairbanks-Morse Sales Engineer and ask him for Bulletin 6910 on this time-proved submersible pump, or write today to Fairbanks, Morse & Co., Dept. ENR-7-4 600 S. Michigan Avenue, Chicago 5, Illinois.

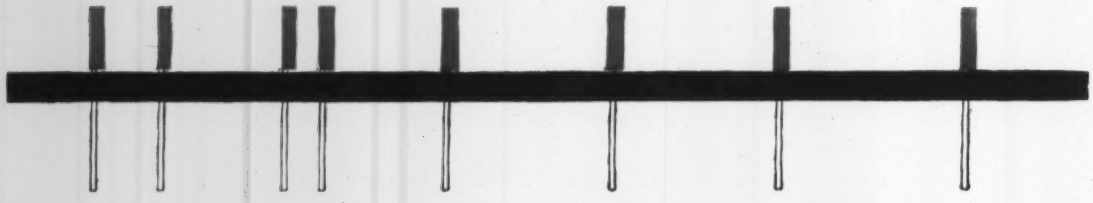
FAIRBANKS-MORSE

a name worth remembering when you want the BEST

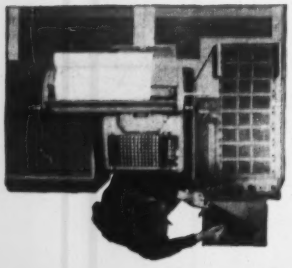
PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY
RAIL CARS • HOME WATER SERVICE EQUIPMENT • MOWERS • MAGNETOS



simple pinboard programming makes the difference...



...a big reason why more E101's are at work than all other small electronic digital computers combined! Solves problems between the scope of desk calculators and costly "electronic brains"... at such low cost, and so handily, that priceless technical man-hours are saved. E101 digital computers can be delivered quickly... instantly available for low-cost technical computation. For proof, send us one of your problems or ask for a demonstration. For descriptive booklet, write:



ElectroData

Division of Burroughs Corporation
with world-wide sales and service facilities
460 Sierra Madre Villa, Pasadena, California

B.F.Goodrich

All-Nylon B.F.Goodrich tires give over 4 years' service to highway excavator

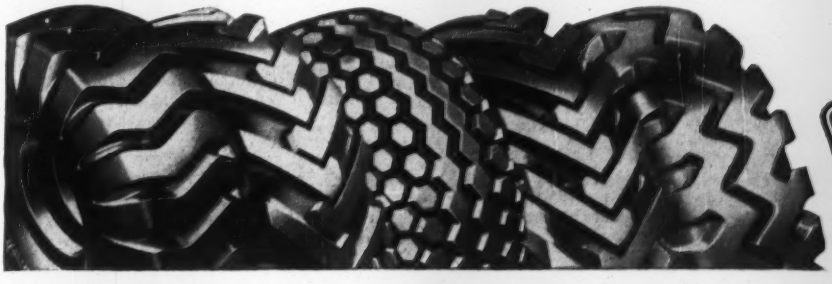
GASPARINI EXCAVATING CO., INC., of Peckville, Pennsylvania, does highway and heavy construction work. Here the company's equipment is at work on the Pennsylvania Turnpike, hauling giant loads over rock-strewn roads. For this rugged work, the company uses B.F.Goodrich FLEX-RITE nylon tires, reports many give over 4 years' service, including 2 retreads.

"B.F.Goodrich *all-nylon* tires have minimized breakdowns, impact breaks and other cost and time-consuming delays," writes President Gene Gasparini. "They help us give maximum contract performance in the shortest contract period."

B.F.Goodrich tires are built with FLEX-RITE nylon cords. FLEX-RITE nylon cords withstand double the impact of other cord materials, resist heat blowouts and flex breaks. Result: more retreadable B.F.Goodrich tires!

Your B.F.Goodrich dealer has a complete line of tires for every off-the-road job, including the new Rock Service Tubeless or tube-type (far left) for mining, quarrying and dirt-moving jobs. And he offers expert, on-the-job tire service. See him today or write *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

There's a B.F.Goodrich tire for every construction job



Specify B.F.Goodrich tires when ordering new equipment

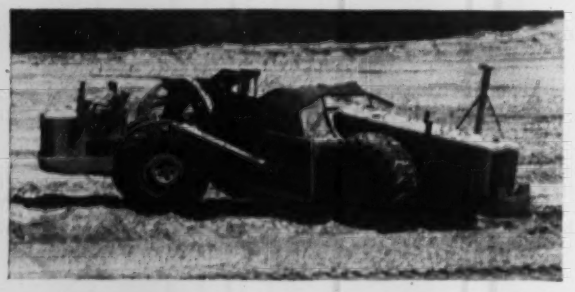
B.F.Goodrich
FIRST IN RUBBER

Your B.F.Goodrich dealer is listed under Tires in the Yellow Pages of your phone book

Ideas For Earth

TWIN-POWER SETS NEW ON SCORES OF JOBS

Gives production not offered by



New "Euc" has struck capacity of 24 yds.

This Model TS-24 is Euclid's latest development in Twin-Power Scrapers. It has a struck capacity of 24 yds. and 32 yds. heaped at 1:1 slope. Tractor is powered by 300 h.p. engine with 3-speed Torqmatic Drive. The rear axle is driven by a 218 h.p. engine with separate torque converter and semi-automatic transmission. Hydraulic steering provides full 90° turns. Tires are 27.00 x 33 standard with 33.5 x 33 optional. Top speed with full payload is 26 mph. using standard size tires.

Pipeline Padding Costs Reduced More than 50%

ARIZONA — Western Pipe Line, Inc. of Austin, Texas is laying 245 miles of 34" pipe across northern Arizona and a 141 mile connection of 20" pipe to Phoenix. It's a tough job across rugged terrain and requires equipment that can take steep grades and rough going.

The pipe must be protected with a 6" blanket of selected material—about one yard of dirt per lineal yard of pipe. Two "Twin" Scrapers have been working on the padding operations hauling material from 1200 ft. to several miles over grades as much as 39%. The contractor reports that the production and work-ability of these scrapers have cut padding costs in half as compared with former methods used.

Rush Job Finished 4 Months Ahead of Schedule

SOUTH DAKOTA—J. H. Beckman Construction Co. of Sioux Falls was awarded a grading contract for 6.8 miles of U. S. Route 16 that involved 360,500 yds. and had to be completed in 6 months. Four Euclid Twin-Power Scrapers, supplemented by 3 other scrapers, some crawler equipment and 3 motor graders, were put on the job and worked 11 hour shifts six days a week.

Because of their Twin-Power and all-wheel drive, the "Eucs" worked independently without assistance from pusher tractors. On one cut they self-loaded 20 bank yards of gumbo and shale in about 45 seconds — completed the 870 ft. haul cycle over cut and fill in an average of 2.83 minutes. Hourly production was 353 yards. Self-loading sand and top soil in another cut the Euclids averaged 21.6 yards in less than a minute. The complete 600 ft. cycle took about 2½ minutes and hourly production averaged 415 bank yards.

With these versatile, fast dirt-movers on the job, grading was completed far ahead of the rush schedule.

Versatility Pays Off at Noxon Rapids

MONTANA — Two Twin-Power Euclid Scrapers are being used by Morrison-Knudsen Co., Inc. at Noxon Rapids Hydro-electric Project on the Clark Fork River in Western Montana. They are building roads, helping with excavation at the dam site and supplementing a large fleet of other Euclid hauling equipment.

Working in heavy wet clay or in sand and gravel the "Twins" pick up loads of 18 yds. or more without help from pusher tractors. With big single tires and all-wheel drive, they work in soft and rutted areas and have plenty of power to move heaped loads over long hauls at fast travel speed.

Owner says "Euc" Twin-Power Scrapers have revolutionized dirt moving in the West

SOUTH DAKOTA — Harris Construction Co. moved 1,000,000 yds. of shale for a railroad relocation job at Mowbridge with only 6 scrapers one motor grader and one roller. That's probably as small a spread of equipment as you'll ever find on a project of this size yet production averaged 13,000 yds. per 10-hour shift. Cycle time on a 1600 ft. haul was about 4 minutes . . . each "Twin" averaging 225 yds. per hour. Owner Ken Harris has found the Twin-Power Scraper the most efficient dirt mover he's ever used and this railroad job wasn't the first time he had parlayed Twin-Power into low cost high production.

In April of 1956, Harris set a new earthmoving record on Montana highway work by moving 90,000 yds. on hauls up to 4000 ft. during six 10-hour shifts. At the same time he was working on the road job, Harris had a 1,200,000 yd. subcontract at Glasgow Air Base, 26 miles away. He moved his "one man earthmoving crews" from one job to another according to weather conditions and work requirements. The "Eucs" were used to the best advantage all the time because there was only an hour's travel time involved and they worked independent of pusher tractors normally needed by scrapers for efficient operation.

3 Million Yard Waste Dump Moved by "Twins"

ONTARIO, CANADA — Moving an old waste dump from a drained lake bed presented a tough problem for Steep Rock Iron Mines, Ltd. The material, consisting of wet silt, low grade ore, stone and boulders, was heavy—about 3200 lbs. per yard. Hauling conditions were difficult because of the soft, spongy footing so it seemed that the job would have to be truck-shovel operation. In spite of these adverse conditions, a Twin-Power Scraper was demonstrated on a haul of 5800 ft. round trip with grades up to 10%. Performance was so outstanding that four machines were purchased and are now effecting major savings on an almost "impossible" scraper job.

Twins Tackle Tough Road Job

VIRGINIA — Contractor Robert T. Main used a Twin Scraper and TC-12 Crawler in a highway cut that had stopped other scrapers because of the extremely soft footing. This combination of Euclid "Twins" had plenty of power, traction and flotation to get the job done efficiently—it replaced a dragline that was brought in when it looked like the job couldn't be done by scrapers.

movers

TWIN EDITION ★ ★

RECORDS

and cost advantages any other equipment

Improved Model of "World's Most Powerful Crawler"

Euclid's Model TC-12 Twin Crawler now has more horsepower, more track area and more accessibility than any other production tractor. It is powered by two 218 h.p. engines with separate Torqmatic Drives for each track—a total of 436 h.p.! Standard shoes are 27" wide and there are now 8 track rollers to give still better balance with heavy duty attachments.

Ten "Twins" Move Nearly 40,000 Yds. Per Day

NEBRASKA — Western Contracting Corp. of Sioux City, Iowa, used 10 "Twin" Scrapers and 5 Euclid TC-12 Crawlers to move 3 million yards on a plant site grading project with a 5 month completion limit. Equipped with 6 yard sideboards and push loaded by the big "Twin" Crawlers to get maximum production, the scraper fleet worked 20 hours a day and moved close to 40,000 yds. daily on hauls of 1500 feet.

This leading contractor's belief that Euclid Twin-Power is tops for low cost earthmoving is backed by lots of previous experience on high production jobs. At Ft. Randall Dam they used a fleet of 30 Model LLD 50-ton Rear-Dumps powered by two 300 h.p. engines. For a 7 million yd. Indiana Turnpike contract Western purchased 15 Twin Scrapers and 5 Model TC-12 Euclid Scrapers. After finishing this big job, part of the Twin fleet was assigned to Oahe Dam while others tackled a highway project in Michigan. This well-known contractor is so "sold" on Euclid Twin-Power Scrapers and Crawlers that estimates and bids are made on the basis of the low cost production that "Twins" provide.

Couldn't Believe His Own Stop-Watch

IOWA — When a contractor-visitor to Wilbur Nielsen's road grading job made a time check on 3 Twin-Power Scrapers he sent to town for another stop-watch because he couldn't believe the time registered on the one he'd used!

The "Twins", equipped with 6 yd. sideboards and push loaded by a torque converter crawler tractor, got loads of better than 24 yds. in an average of 50 seconds. In spite of the mile and a half long haul, the three scrapers averaged 336 yds. per hour. Working 10½ hour shifts six days a week, with an availability record of 95%, Nielsen's "Eucs" completed the grading well ahead of schedule.

"TWINS" are making headline news!

Twin-Powered Euclid Equipment is out-performing all other equipment by a wide margin — the profit margin — on all kinds of earthmoving. With "Twins" in your fleet you'll have a bidding advantage that can pay off in more jobs and more profit. Get the facts from your Euclid dealer and you'll know why owners everywhere have proved Euclids are your best investment.

EUCLID

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

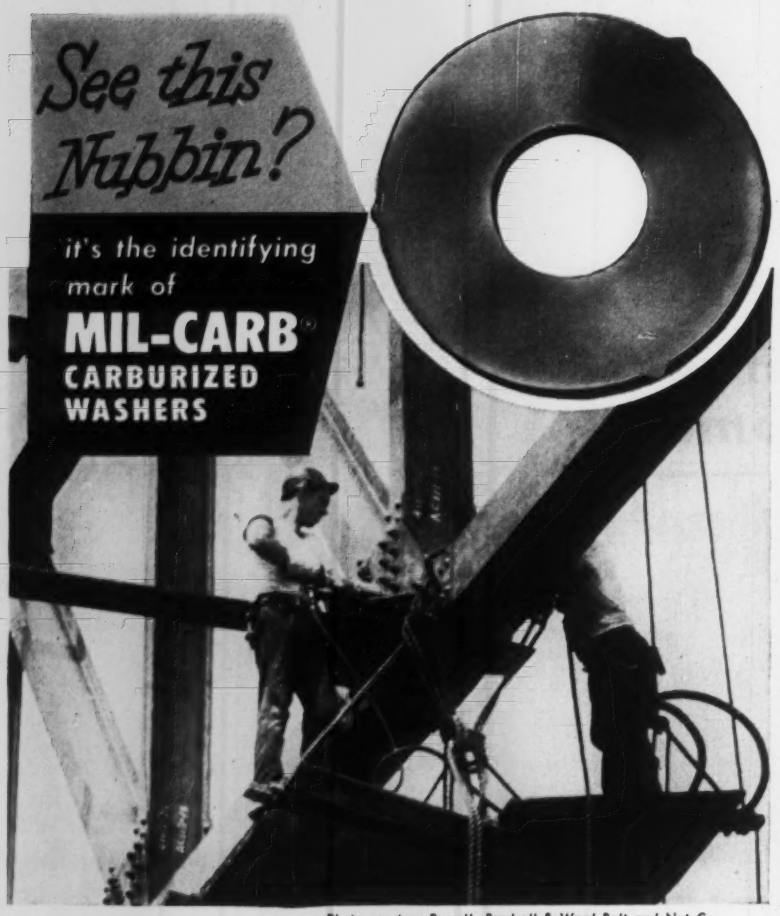


Photo courtesy Russell, Burdsall & Ward Bolt and Nut Co.

From an appearance standpoint, all washers, regardless of brands, practically look alike. But, *there's a big difference in quality!* That's why, for easy identification and to insure your getting the very best, Mil-Carb Carburized Washers are identified by 3 "nubbins" on the outside rim.

Mil-Carb washers are outstanding on at least three counts:

1. **Only Prime Quality Special Soundness Steel is used for strength equalling or exceeding the rigid specifications of ASTM designation A-325 *at all times!***
2. **A special treating process provides an exceptionally hard "outer skin" to resist grinding by the nut under the impact wrench *when others fail!***
3. **MIL-CARB washers are always uniformly flat and smooth with dimensions conforming to the American Standards Association.**

For your own protection and as a guarantee of the unyielding permanence of your steel structure . . . "look for the nubbin". . . specify MIL-CARB Carburized Washers. Available in six sizes, from 5/8" to 1 3/8", packed in 200 lb. kegs.

Distributed by Leading Bolt and Nut Manufacturers and

U. S. STEEL SUPPLY DIVISION
UNITED STATES STEEL CORPORATION
208 South La Salle St. • Chicago 4, Illinois

WROUGHT WASHER MANUFACTURING CO.
The World's Largest Producer of Washers
2224 S. BAY ST., MILWAUKEE 7, WIS.

A 7-9171-2/3

Reader Comment

Favors Salary Spread

SIR—Have just read "How Engineers' Salaries Have Changed—And Why" (ENR June 6, p. 46).

The figures on salary spread are very enlightening. I would like to make a point the author has overlooked.

In 1930, each one of his four grades of engineers received in salary around 50% more than the grade below. A real incentive was provided to stay in the profession and advance one's position.

Now what do we have? The 1956 senior engineer gets 9% more than the assistant! The chief, 25% more than the senior engineer. The young engineers of today are neither stupid nor unobservant. They look around in their own organization, and when they see the man of 10 or 15 years' more experience getting only 9% more than their present salary, they start reading the "positions vacant" columns.

If we really want to get more engineers, employers will have to re-establish a salary progression like that of 1930. Otherwise, the really intelligent will take their talents elsewhere, and only the mediocre and unambitious will remain employed as engineers.

JAMES WILSON
Jamaica, N. Y.

Material Omitted

SIR: We have just read with considerable interest the article on p. 30 of your July 4 issue, entitled "Unusual Turnpike Is Bond Financed City Expressway."

The article is most complete and carries practically all of the details regarding this project which would be of interest. However, we note omission of the fact that this entire turnpike is being paved with asphaltic concrete, including a 7½ in. asphaltic concrete foundation and a 2 in. wearing surface of the same type.

T. R. ELLIS
Manager, Asphalt Sales Dept.
The Texas Co.
New York

Reinforcing Steel Errors

SIR—The May 2 issue of ENR contains two confusing items concerning reinforcing steel.

On page 32 the 65 ft beams of the Idlewild bridges "contained . . . strands and 31/8 in. dia alloy steel bars." The 81 ft beams "contained . . . strands and 71/8 in. dia structural steel bars."

On page 63 the Ville La Salle Silos

have "double layers of up to 5 in. dia bars." These are in a 12 in. thick wall.

These sizes of reinforcing bars seem unusual. Will you give a little further information concerning the steel of these two structures?

C. L. DAYTON
Seelye, Stevenson Value & Knecht
New York, N. Y.

[**Editor's Note**—Dimensions and quantities for the Idlewild bridges should have read, "three 1⅛ in. dia alloy steel bars" and "seven 1⅛ in. dia steel bars."

For the Ville La Salle Silos the reinforcing should have been 1⅛ in. dia bars on the inner ring at the bottom, 1 in. dia bar on the outer ring at the bottom to ⅞ in. dia bars in both rings at the top.]

Free Standing Columns

SIR—Mr. Mumper's deduction (ENR June 20, p. 8) that free-standing columns must be analyzed for bending moment is correct. However, his comments regarding braces on the columns and horizontal forces on the structure are not correct.

First, any detail that will insure a high degree of fixity at both the top and bottom of each column will improve the lateral stiffness of the structure considerably.

Secondly, the horizontal force is not a constant fraction of the dead load. For this type of structure, analysis should be made on the basis of rigid-frame theory. Pipe columns frequently will prove to be an economical choice.

In this instance, as in all others, "handbook" engineering is not only inexact and uneconomical but also a possible danger to property and life.

WARREN PFEFFERLE
Norfolk, Virginia

Wind Factors Are Needed

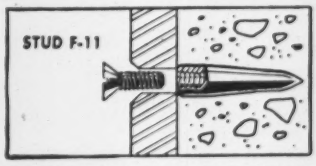
SIR—I wish to urge consideration of George N. Hyland's views (ENR June 13, p. 8) relative to the article, "New Standard Wind Load Requirements" (ENR Feb. 14, p. 33).

His point that the actual factors causing wind load—mean velocity, gust factor and shape—be kept in view seems well taken. Not only can the designer inform his client as to actual wind velocities and gust factors for which he is providing, but he can also modify these basic quantities to suit individual circumstances with much greater ease. Furthermore, it is likely that continuing research will dictate modification of shape factors, gust factors and velocity

Just one of *101* Stud Driver uses!

No outside power source required—

Install metal door sills to concrete in seconds with the Remington Stud Driver



Metal fixtures are easy to install with the Stud Driver. Use a Remington F-11 internally threaded Stud and a 22 caliber Power Load. Attach fixture with #10-24 machine screw . . . no pre-drilling, no outside power needed!

Here's the sure way to save time and effort on your construction fastening jobs. Just load a Stud Driver, press firmly over work, squeeze the trigger—and the job's done! Scientifically graded 22 and 32 caliber Power Loads furnish *exact* driving force you need to anchor ¼" or ⅜" diameter studs into concrete or steel . . . size change-over takes only 90 seconds, *right on the job.* Special guards and over 40 different studs make the Stud Driver the most versatile fastening tool available!

FREE BOOKLET shows how and where to use this cost and time-saving tool. Clip and mail the coupon for your copy.

Remington

DUPONT

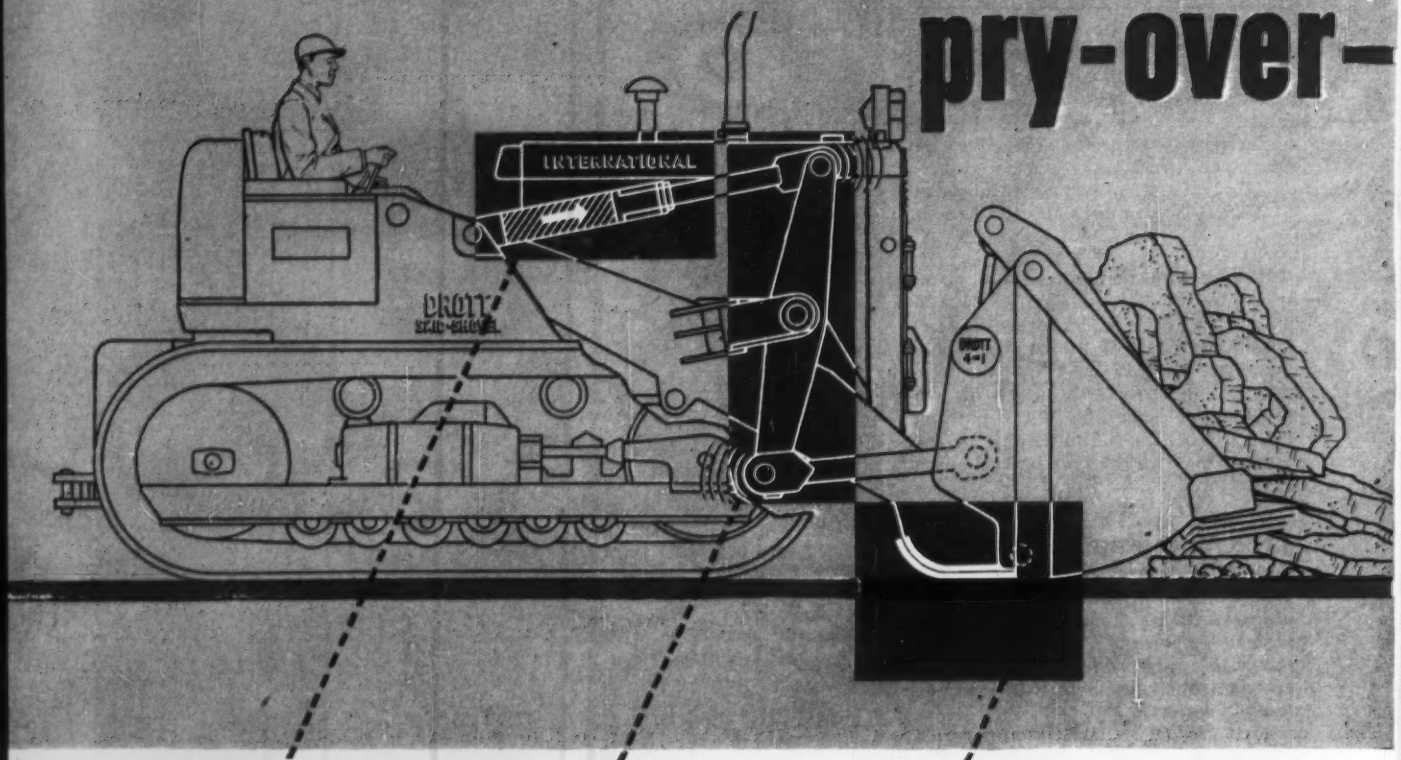
STUD DRIVER

Industrial Sales Div., Dept. ENR-8
Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send me your free booklet which shows how I can speed the job and save with the Stud Driver.

*Name*_____ *Position*_____
*Firm*_____
*Address*_____
*City*_____ *State*_____

LET'S TAKE A pry-over–



Full hydraulic power transfer! Famous International Drott *triple-power* hydraulic force results from ingeniously applying oil pressure upon the piston's *full face*—instead of using the customary, and limited, rod-end area for the "power-push" surface! Only International Drott gives you this tremendous hydraulic power to produce concrete-smashing, tree-grubbing, boulder-bucking pry-action break-out!

Far greater leverage. See how International Drott scientifically-correct *lever length* transfers *full* triple-power hydraulic force to the fulcrum. No costly power-dissipating "step-downs" here to lose one-fourth to one-half your hydraulic power, as ordinary design does! Instead, International Drott full power-applying leverage gives you tough-job-handling digging force and capacity ordinary loaders can't even begin to equal!

Ground-based fixed fulcrum! Here's how exclusive International Drott design provides the famous frame-mounted skid-shoes—to act as the absolutely necessary *fixed fulcrum.* Without this, true pry-action break-out is impossible. The big *exclusive* International Drott skid-shoes provide the steady, ground-based platform for true ground-level bucket-heaping roll-back of 41°!

Prove to yourself you command a vast new job-range and capacity—with this super-powerful excavating, bucket-heaping pry-action. See what happens when you team this performance with the *versatility unlimited* of an exclusive Four-In-One. Compare how *exclusive* shock-swallowing Hydro-Spring "gentles" trouble-causing impact by 67%! Ask your International Drott distributor for a demonstration!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

CLOSE LOOK AT TRUE

–shoe break-out action

Only <u>original</u> and <u>exclusive</u> International Drott design transfers <u>full</u> hydraulic power to give you tremendous <u>extra</u> excavating force!

Genuine pry-action break-out has three absolute essentials: (1) *full hydraulic power transfer;* (2) *long lever,* to apply pry-power without power loss; (3) *fixed fulcrum,* located to concentrate break-out force for maximum effect.

Here's how exclusive International Drott "separates the men from the boys" in heavy-duty loader design—and gives you front-end loader performance and capacity nowhere else available.

Kuschler Construction Co., New Orleans, Louisiana, specializes in demolishing old service stations to be replaced with super-service stations.

Kuschler tore down this old station in one day, then removed the concrete work the second day—doing the entire job with their International Drott TD-9 Four-In-One!

Previously, the contractor demolished the buildings and concrete with compressed air hammers and a three-man crew. Their other make of front-end loader, without true pry-action break-out, was limited to loading debris.

Now, one man, using triple-power International Drott pry-action break-out, accomplishes as much in one day as the three-man crew and four separate items of equipment were able to do in a whole week!

From coast to coast thrift-minded owners report:

"Climbing the 1,200-foot ramp that rises 100 feet from pit to primary crusher, our '95' Payhauler averages a 22-ton load of shot granite every 8 to 10 minutes," reports Supt. H. C. Burgess, for Superior Stone Co., Woodleaf, North Carolina. "Production of this hauler unit is 1,000 tons per 7 hours." And the "95's" turbocharged diesel burns only 4½ gallons of low-cost fuel per hour on this tough quarry job!

"Grade-beating, rock-speeding Payhauler® gives us the decisive profit margin of difference!"

"The fast reverse of the '95' Payhauler is a big advantage on narrow, one-way haul roads—enabling our two units to keep the big shovel busy," states Howard Durbin, for Durbin Brothers, Eugene, Oregon. "Our other haulers with slow back-up could not do this."

"Down switch-back grades as steep as 30%, the '65' Payhauler takes its loads—then climbs back out at fast speeds," declares Supt. Howard Eaton, for Funderburk Construction Co., Sutherlin, Oregon. "The best of the other haulers of this size just can't keep going on our tough Roberts Mountain haul road, like the '65' can!"

"Two '95' Payhauler trucks (24-ton capacity) replaced three 15-ton competitive haulers, and handle the operation with ease," says Supt. Henderson Hawkins, Stone Mountain Grit Co., Lithonia, Ga. "With unusually fast hoist, good balance, and speedier delivery, the '95's' reduce spotting and dumping time, also save 20% on fuel."

On tough St. Lawrence Seaway—for United Waterways Constructors—11 '95' Payhauler trucks are sparking a demanding monthly production schedule of 120,000 cu yd of rock, and 100,000 cu yd of common earth. *Next-to-automatic* Payhauler control gives safe, capacity-adding speed over rough terrain!

At 7,600 feet altitude, a fleet of 4 turbocharged diesel-powered "95" Payhauler units help Morrison, Walsh & Perrini highball rock-fill to build Wishon Dam—in Sierra National Forest, California. All 4 operators vote superior riding comfort, torqmatic braking safety, hand-operated dumping brake, as stand-out '95' advantages!

"Engine power matches hauler capacity, to pull a 20-22 ton load from the quarry in second gear, over haul-road grades as steep as 15%," reports J. L. Sutherland, '65' Payhauler operator for Jefferson County Stone Company, Anchorage, Kentucky. "The Payhauler rides good, has excellent visibility, and maneuverability, shifts easy."

Prove an International Payhauler's production-boosting speed! The "95" is turbocharged diesel-powered to highball at 38 mph—the "65" at 36.4 mph! Try the "pick-up truck" spotting ease—using exclusive high reverse and "zip-around" power steering to position the "big-target" body, double-quick. Compare how the double-acting hydraulic hoist, under exclusive hand-brake control, gives 10-to-12-second dumping. Measure the big profit-building margin of difference—see your International Construction Equipment distributor for a Payhauler demonstration!

Satisfaction with two Payhauler trucks on one successful rock-moving contract prompted Clarkson Construction Co., Kansas City, Mo., to add three more "95's" to their fleet—to help handle a new, bigger contract. "Best production I've ever had," says Project Superintendent H. D. Brown.

"Our three '65' Payhauler trucks move up to 2,000 cu yd of shot rock per 10 hours on a 1,200-foot delivery haul," states Warren Greer, for Greer Brothers and Young, London, Kentucky. The contractor is using these trucks to move 165,000 cu yd of shot rock relocating a section of U. S. 27 in Lincoln County, Ky.

INTERNATIONAL®
CONSTRUCTION
EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Appearance is also part of the specifications for a concrete building. Be sure your buildings have a professional finish. Cover cracking and spalling *permanently* with SURCO.

SURCO, the oldest latex binder on the market, is mixed with cement and aggregate by easy-to-follow directions . . . may be troweled or brushed on new or old concrete in thin coatings to permanently cover all cracks and spalling. It's not affected by heat or frost. Inexpensive to use, SURCO comes in 1, 5, or 55 gallon containers for any size job.

SURCO
International Corporation
1330 West Peachtree, N.W.
Atlanta 9, Georgia

Interlocked super-safety
GRATING

Dravo I-U-2 safety grating is particularly desirable in areas for public use. Bearing bars are 3/16" thick, spaced 1" or 1 1/8" apart. Cross bars are 2" center to center. Note spacing—an object over 1/2" square cannot pass through openings.

For information, write Dravo Corporation, Dept. D-2408, Pittsburgh 22, Pa.

DRAVO
CORPORATION

CASE METHOD

Saves time and money . . . We are specialists in

DRILLED PILING and BELLED CAISSONS

In addition to replacing several piles with one belled caisson thereby eliminating a pile cap, belled caissons are replacing spread footings on more and more jobs because of the economies and the speed-up of the job.

CASE FOUNDATION CO.
Box 298 — Roselle, Ill.
Phone (Chicago) . . . . Columbus 1-0290
Detroit Office
1380 Penobscot Bldg. . . . . Woodward 1-7280

. . . Reader Comment

distribution equations, thus making pressure intensities based upon particular values of these quantities obsolete. The general equation proposed by Mr. Hyland is thus doubly desirable.

A second point worth stressing is the fact that the use of "shape factors" to estimate design wind loadings can result in inexact pressures unless these factors are used with considerable understanding.

Particular caution should be exerted in estimating loads on structures of composite form. For example, a relatively small rectangular building on the roof of a tall building, such as the housing for elevator equipment or a small penthouse, may lie completely in the eddy that forms over the roof due to separation at the windward edge. Hence it may not be exposed to high wind velocities. On the other hand, a chimney projecting from the ridge of a gabled roof is in a region of abnormally high velocity and thus subject to higher velocities than the building itself.

Another disadvantage is that the "shape factor" obscures the actual pressure variations on all sides of a structure. It fails to reveal areas of large negative pressure, which may require different treatment, because of the outward forces exerted on them, from that accorded areas of positive (inward) pressure.

Typical pressure distributions around buildings of simple form (see, for example, "Wind Pressure on Elementary Building Forms Evaluated by Model Tests," J. W. Howe, CIVIL ENGINEERING, Vol. 22, No. 5, May, 1952) should be carefully studied before deciding what wind pressures to use on various portions of a building. In fact, if the form of a building of any importance is complicated, model tests should be made in order that actual pressure wind loads can be closely estimated.

J. W. HOWE
State University of Iowa
Iowa City, Iowa

CALENDAR

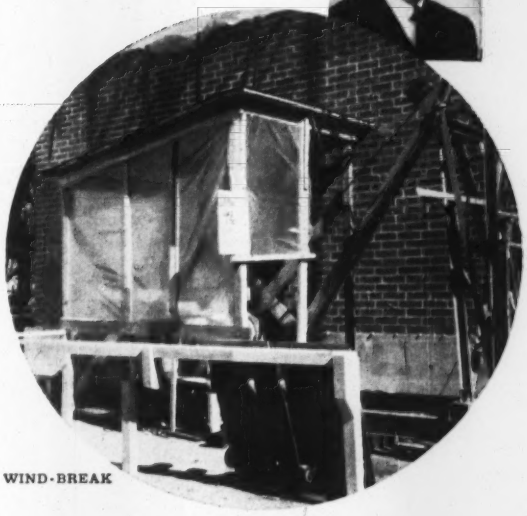
World Conference on Prestressed Concrete, Fairmont Hotel, San Francisco, Calif., July 29-August 2.
Hydraulics Div., American Society of Civil Engineers, Kresge Auditorium, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 26-28.
International Conference of Building Officials, annual business meeting, St. Francis Hotel, San Francisco, Calif., Sept. 13-15.
Building Research Institute's Plastics Study Group, Washington University, St. Louis, Mo., Sept. 17-18.
Public Works Congress and Equipment Show, American Public Works Association, Grand Exhibition Hall, Philadelphia, Pa., Sept. 22-25.
Federation of Sewage & Industrial Wastes Associations, Hotel Statler, Boston, Mass., Oct. 7-10.
American Concrete Institute, regional convention, Seattle, Wash., Nov. 4-6.

"Olin Polyethylene... best and most economical moisture barrier we've ever used!"

MOISTURE BARRIER IN SLAB CONSTRUCTION

Picture, NEW ORLEANS ITEM

Oscar Tolmas
Tolmas Construction Co.
New Orleans, La.

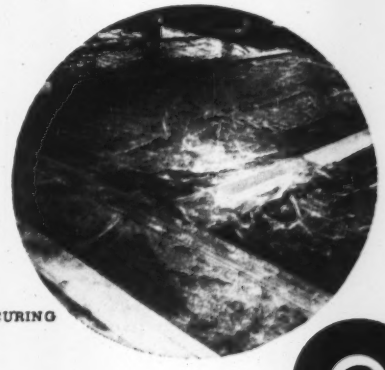


WIND-BREAK

"Olin Polyethylene gives us solid advantages over the barrier material I would have used ordinarily," says Oscar Tolmas, Tolmas Construction Company, New Orleans. "First of all, it costs about one-half as much, and in its .004" thickness weighs about *20 pounds* per 1000 sq. ft. Just compare that to the over 500 pounds per 1000 sq. ft. weight of the material I had been using. What's more, Olin Polyethylene comes in wide roll widths which makes the job still easier.

"Just as important is the fact that Olin Polyethylene is a *pure* barrier material, it doesn't degrade after a period of time. Once Olin Polyethylene is in place, it'll last the life of the building. In addition to being economical and durable, it's versatile. We use it as a 'wind-and-weather-break,' and as a tarpaulin to cover equipment and supplies. It also makes a top-notch 'curing' blanket. I'm sure there are plenty of other jobs where Olin Polyethylene will do the job better at less cost."

Unaffected by most acids, alkalies, bacteria, mold or temperature changes, Olin Polyethylene is a *permanent* multi-use moisture barrier that costs less, does more. For full information, write: Film Division, Olin Mathieson Chemical Corporation, 655 Madison Avenue, New York 21, New York.



CURING

Accepted by VA and FHA
Look us up in Sweet's Catalog (1957 Edition).
- Industrial Construction File 5/OL
- Architectural File 9/OL
- Light Construction File 3a/OL

Also under . . . AIA File No. 24-D (NN)

Olin
POLYETHYLENE
OLIN MATHIESON CHEMICAL CORPORATION ®

FILM DIVISION
OLIN MATHIESON
CHEMICAL CORPORATION
655 MADISON AVENUE
NEW YORK 21, NEW YORK

Please send me free booklet and the name of my nearest supplier of Olin Polyethylene.

name_____ title_____

company_____

address_____

CENIC-81

HIDDEN REINFORCEMENT

Great grandmother used hidden reinforcement to restrain her figure; Lock Joint prestressed pipe design uses much the same principle to restrain the high internal pressures in present day water transmission lines. Lock Joint's hidden reinforcement consists of high tensile wire wrapped under high uniform tension around the core of the pipe.

Can you guess how many miles of such wire were used in the 120,000-foot 66" Lock Joint Prestressed Concrete Embedded Cylinder Pipeline for Wichita's water supply system? The answer will be found—not too carefully hidden—in the picture above.

Samples of all such high tensile wire used in the production of Lock Joint prestressed pipe not only are certified by mill tests, but also must meet the exacting standards demanded by rigorous tests to which they are subjected in Lock Joint's own laboratory. This is only one of the many quality control measures employed in every phase of the manufacture of Lock Joint Pressure Pipe to assure the customer the finest product obtainable.

LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

ENGINEERING NEWS-RECORD

Vol. 159, No. 5 August 1, 1957

Number of copies printed this issue: 78,771

CONTENTS

NATIONAL AFFAIRS

Will A-Power Be Public or Private? 21
Turnpike Officials on Trial 23
Pipeline from Canada to California 24
Lightning Destroys New Pavement 24
Columbia Basin Compact May Build Dams 24
Failure in Colorado Earthfill Dam 25
Rocky Reach Dam Bids Opened 26
Ski Jump Spillway Nears Completion 26
Mexico City Buildings Damaged by Earthquake 27

FEATURES

State Building Sets New Pattern 28
Novel Structures for Grain Storage 33
Bold Use of Prestressed Concrete 36
Men Move Water, Earth to Get at Ore 40

NEW PRODUCTS

Coin-Size Beam Compass Scribes 12 ft Diameters 45
Lightweight Seismograph for Subsurface Exploration 45
Reserve Cable Supply Reel for Cat Dozers 45
Index Locates Plans in Vertical File 45
Three-Dimensional Tiles Give Design Variety 45
Detachable Grousers Increase Loader Production 45
Publications 46

INTERNATIONAL

Orinoco Steel Mill Gets Started 51
Longest Concrete Arch to Span Parana River 51

MEN AND JOBS

Top NSPE Officers Elected 54
New Orsanco Chairman Is Named 54

BUSINESS AND FINANCE

A Big Business That's Getting Bigger 74
Another Skyscraper for New York City 78
Columbus Studies $185 Million in Public Works 78

LABOR

Labor Helps Build Safety Record 80
Jurisdictional Issue Raised in State Merger 81
Plasterers, Bricklayers Question Featherbedding 82

Reader Comment 8
Calendar 14
Washington Observer 19
Obituaries 58
Unit Prices 61
Materials Prices 62
Construction Reports 65
Scoreboard 72
Editorials 96

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 50¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

CEMENT ON THE WAY—Settlement of the two month cement strike probably will come this week. A spokesman for the Federal Mediation and Conciliation Service said that by the end of the week "we will see a substantial settlement of the strike with most of the major plants probably reaching agreement with the unions." Early this week Universal Atlas Cement Co. reached agreement with the United Cement, Lime and Gypsum Workers Union. Three plants of Lehigh Portland Cement Co. and three Georgia and Tennessee plants of Penn-Dixie Cement Corp. also signed new pacts. All are major producers.

HIGHWAY BID PRICES STEADY—Contractors' bid prices on federal-aid highway jobs were steady during the second quarter. The Bureau of Public Roads Composite Mile Bid Price Index for the April through June period was 142.7, based on 1946 = 100. Although it was only 0.1% above the first quarter, it still inched to a new all-time high and was 5.4% higher than in the second quarter of 1956.

ARIZONA CAPITOL DECISION—Resolving years of arguments over what kind of capitol to build, Arizona's Building and Planning Commission has authorized construction of two new 3-story wings for the existing capitol. Among the proposals discarded by the commission was Frank Lloyd Wright's design for a pagoda like concrete and copper edifice (ENR April 11, p. 27). Also dropped were designs for a 20-story skyscraper and capitols with one, two and three domes. The new wings will contain 80,000 sq ft each and will cost $2 million.

TIME FOR A CHANGE—Connecticut state officials last week decided that its next issue of Connecticut Turnpike bonds to total $35 million will be backed with the full faith and credit of the state. It is the first use of the state's full taxing power as security for the turnpike bonds. Earlier issues, totaling $250 million, were revenue bonds secured by tolls and a portion of the gasoline tax. Continued tight money was cited by State Treasurer John Ottaviano, Jr., as the reason for the policy shift. Bids on the new issue will be received Tuesday. The recently adjourned legislature authorized full credit backing on the turnpike bonds up to a maximum of $147 million.

HECK AIMS HIGH—From a statement issued this week there was a healthy indication—at least—that legislators are beginning to see the water pollution problem in its full proportions. New York State Assemblyman Oswald D. Heck was reported as suggesting a $500 million bond issue to fight the state's water pollution problems. Relating pollution abatement to water supply, he says it is a problem "to be placed nearly first on the agenda of any governor."

'Faster From Foster' meant plenty on this extra-tough pile driving job

This contractor was driving piles through silty material made soft by a heavy, rainy season. And he had to work in a narrow, twisting, busy street. No space for job-site storage, and as always, a heavy cost penalty for time lost waiting for late material. By renting 27 to 33-ft. lengths of steel-sheet piling from L. B. Foster Company, he got deliveries *as the piling was needed*—delivered by Foster trucks over routes planned during light traffic periods. All the headaches that could have been the contractor's were eliminated by using the Foster Piling Rental Plan, and the pile driving was completed on schedule.

Foster Piling Rental Service is complete—for all types of steel-sheet piling (and lightweight piling). You get the right type, the exact section, the exact length . . . when you need it . . . and on the low fixed cost of our rental plan. Ask your nearest Foster office for details and prices on your temporary piling needs, and see for yourself the savings in the Foster Piling Rental Plan.

"FASTER From FOSTER"

Steel-Sheet Piling, Pipe for Piling, H-Bearing Pile, Lightweight Piling—Rails, Pipe & Fabrication

L B FOSTER CO. PITTSBURGH 30, NEW YORK 7, CHICAGO 4, HOUSTON 2, ATLANTA 8, LOS ANGELES 5

WASHINGTON OBSERVER

- **Engineers want to operate Seaway**
- **Costs stop lease-purchase revival**
- **Hells Canyon fight seems settled**

● **Army Engineers want to be the operators of the St. Lawrence Seaway**—and they are making their pitch to displace the St. Lawrence Seaway Development Corporation. General Itschner has presented the Engineers' case to Army Secretary Brucker who supervises and directs the administrator. President Eisenhower delegated this authority to the Secretary of Defense who in turn delegated it to Brucker. Brucker may not have the last word: The Development Corporation's Lewis G. Castle could appeal Brucker's ruling to the White House, or even to Congress.

The Engineers think they are the agency best qualified for operating and maintaining the locks and canals, which they are now building as design and construction agents for the corporation. Castle wants the corporation to hire its own personnel and has already notified the Engineers that he will be against any move to take over.

Key congressmen and senators from the northeastern states will fight if the Engineers get the backing of the Administration. They suspect the Engineers of sheer empire-building; Senator Aiken of Vermont says they shouldn't operate a project which depends on toll collections to retire revenue bonds.

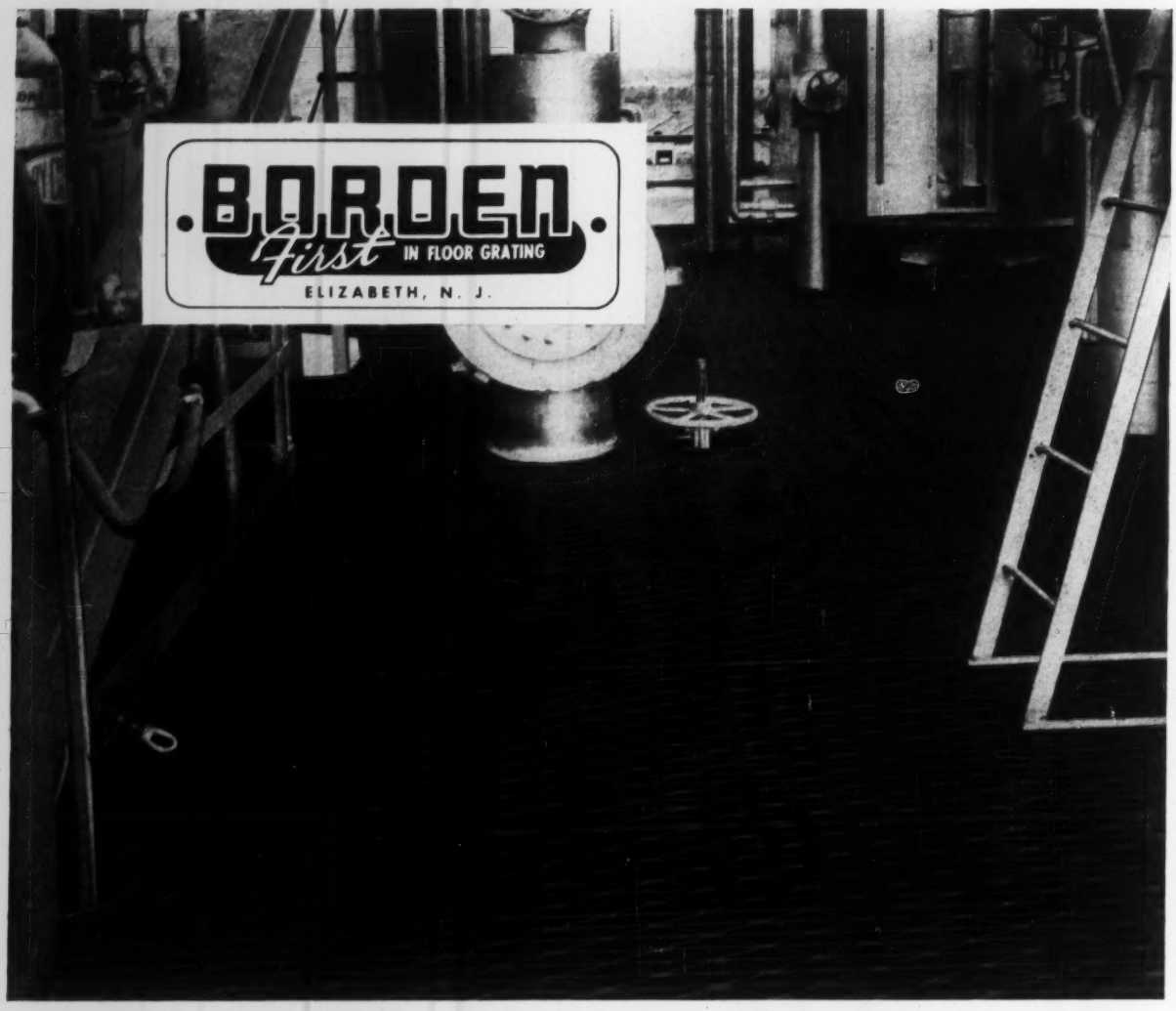
● **No lease-purchase projects are going ahead except those now under construction.** That's the word from the General Services Administration this week, after officials checked out the chances of going ahead with some 97 projects which could be put out for bids even though the law has expired.

The trouble is that costs would run above the ceilings written into the approval, and GSA isn't going to ask for revisions. The effort to amend and extend the law died in the House Public Works Committee after the bill had passed the Senate. Odds are against the Administration trying to revive the program next year. The legislative situation is against getting any federal funds this year for any of the buildings. Everything goes over to 1958.

● **Any last hopes for a high Hells Canyon Dam all but expired last week** when the House Interior Committee voted it down. The real bitter-enders can cling to the fact that the bill could be brought up again next year—but chances for approval by this Congress are almost nil.

The Congress coming to town in January, 1959, could be pro-high dam. But by that time, Idaho Power will have $100 million or so invested in the Browlee Dam—which means adding that amount of money to the cost of any federal high dam, and makes it even less attractive to Congress than it is now.

The federal high-dam bloc took another setback on the Snake River, too, when an FPC examiner ruled in favor of two power-only dams—Pleasant Valley and Mountain Sheep—to be built by Pacific Northwest Power Co. downstream from Hells Canyon.



BORDEN MANUFACTURES EVERY TYPE FLOOR GRATING

IN FERROUS AND NON-FERROUS METALS

- **EASY TO INSTALL** – engineered in conveniently sized units for easy installation.
- **EXTRA STRONG** – reinforced, designed with maximum safety factor.
- **LIGHT WEIGHT** – approximately 80% open, reduces dead weight, allows greater live load.
- **SELF-CLEANING** – creates greater safety, economy of maintenance, no sweeping or washing required.

Write for complete information on BORDEN All/Weld, Pressure Locked, and Riveted Floor Gratings in this FREE 16-page catalog

BORDEN METAL PRODUCTS CO.

815 GREEN LANE Elizabeth 2-6410 ELIZABETH, N. J.
SOUTHERN PLANT—LEEDS, ALA. — MAIN PLANT—UNION, N. J.

BORDEN METAL PRODUCTS CO.

Gentlemen:

Please send me BORDEN Catalog

NAME .....

TITLE .....

COMPANY NAME .....

ST. AND NO. .....

CITY AND STATE .....

This week the Congressional Joint Committee on Atomic Energy neared the end of its deliberations. It seems certain that the AEC will be directed to start a federal reactor program. But with $268 million of atomic construction in the balance, there is still the question . . .

A-Power — Public or Private?

The Congressional Joint Committee on Atomic Energy, in the process of flexing some new authority, fell into a wrangle last week about public power policy in a $268 million atomic construction program for this fiscal year.

Chances are fairly good that the committee ultimately will direct the reluctant Atomic Energy Commission to make, at least, a start on the federal reactor program to produce electric power for civilian consumption.

But early this week, inside the committee room there was still going on—in the words of a staff member—"very intense discussion about the direction and scope" of the nation's civilian atomic program.

The pending measure, approved earlier by a subcommittee that split along party lines, is noteworthy—aside from public power features—because it is the first itemized atomic construction bill that Congress ever has considered.

Committee Democrats seized upon newly invoked authorization rights to initiate a public power program in atomics by writing in language authorizing—in other words, directing—the Atomic Energy Commission to build five reactors for the benefit of public power co-ops and municipal power agencies.

The AEC, under Chairman Lewis L. Strauss, is unenthusiastic. Indeed, it has been negotiating for a year or so to have the self-same reactors, all of different types, built in a partnership arrangement with the local groups.

The public power approach would work this way: AEC would build the reactors and retain title to them but would sell the steam they generate to the public power groups at the going rate for conventionally produced steam.

For initial work on the five reactors, the subcommittee authorized about $130 million. Eventually, the five would cost upwards of $140 million.

Largest of the five is intended for the Consumers Public Power District of Nebraska. A sodium-graphite reactor, this would be rated at 75,000 kw and would cost upward of $50 million.

The other four are:

- The City of Piqua, Ohio—12,500 kw, organic-moderated reactor.
- Wolverine Electric Cooperative of Big Rapids, Mich.—10,000 kw, aqueous homogenous reactor.
- Chugach Electric Assn. of Anchorage, Alaska—10,000 kw, natural uranium reactor.
- Rural Co-operative Power Assn. of Elk River, Minn.—22,000 kw, boiling water reactor.

The result was a setback for the Administration, but it was not precisely what most ardent public power advocates wanted. Sen. Albert Gore had urged a $400 million federal program.

If, as seems likely, Congress approves the authorization, the Administration has one out—a Presidential veto. But since this would jeopardize the entire atomic construction program Administration acquiescence seems more probable.

Atomic construction fell into the same class as public works for the first time as a result of a March speech by Chairman Clarence Cannon of the House Appropriations Committee. Heretofore, Congress had given the AEC its funds in a lump sum, and the commission had gone its own way in spending them.

Now, AEC finds itself in the same position as the Bureau of Reclamation or the Corps of Engineers in going after money—first, get itemized authorization from one "overseer" committee; second, get the actual appropriation through (1) the Appropriations Committee and (2) Congress itself.

This new process actually does not shed a great deal of new light on AEC construction plans. The bill itself is bare of detailed explanation, and the record of Joint Committee hearings—conducted behind closed doors, as is customary—has been heavily censored.

But these points come through:

- AEC plans to spend about $41 million on its special nuclear materials program.

(Continued on page 22)

. . . Will A-power be public or private?

This sum includes $12 million for "reduction of fire hazards" by improving roofing at the Oak Ridge, Tenn., Paducah, Ky., and Portsmouth, Ohio, plants where uranium 235 is produced. The decision was made following a $2.6 million fire early this year in the Paducah plant.

Also part of the special materials program is $3 million for development, design and engineering of a production reactor to produce plutonium for weapons.

AEC is scheduled to report back to Congress by next April with cost estimates and a tentative construction schedule.

(Some Democrats had been pressing for addition of a $95 million dual purpose reactor to the AEC's existing works at Hanford, Wash.)

• **Money for atomic weapons**—The atomic weapons program to be undertaken by the commission will cost about $35 million, of which about $8.3 million is intended for physical improvements at the Nevada and Eniwetok testing grounds.

Of the $35 million, another $10 million is for new plant facility for production and development of bombs and warheads.

Other major weapons items include: $2.1 million for the high explosive development plant at Livermore, Calif.; $6 million for a weapons special component plant, on which all discussion was stricken from the hearing record; $2.9 million for work on a full weapon-size test reactor at the Sandia, N. M., base.

• Bulk of the funds, of course, are for reactor development aimed at advancing nuclear arts primarily in the electric energy field.

Most of the money authorized under this section of the bill is for continuation of work on going projects—such as Project Sherwood, which gets $7.75 million for further experimentation in controlling the release of thermonuclear energy (the type produced in an H-bomb) within a magnetic field.

Incidentally, $5.6 million of the $7.75 for "Sherwood" will pay for a building at Princeton, N. J., to house experimental devices already on order (at $17.5 million cost).

But some are new construction proj-

A-Power—A Building Market to Watch

Rapid developments in the field of nuclear research have an impact on the construction market that cannot be overlooked by the building industry.

Within 31 months, in the period from January 1955 to July 1957, atomic construction contract awards fire-balled from a solitary award of $59.9 million in 1955's initial month to a cumulative total of $388.4 million as of last month.

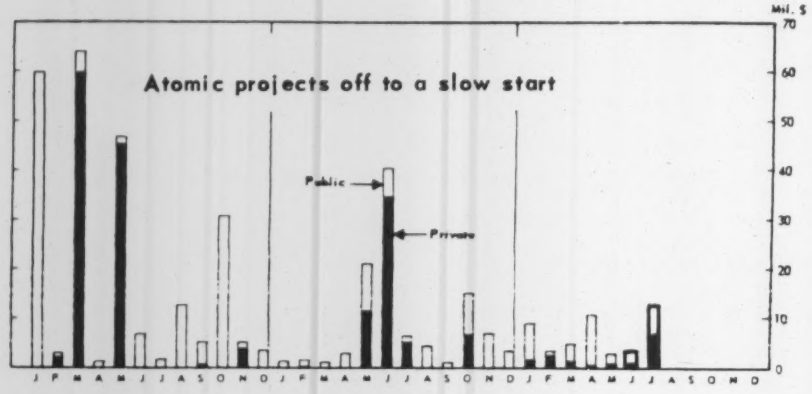
The contract award figures had their ups and downs, however, as shown by statistics that have been maintained by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY.

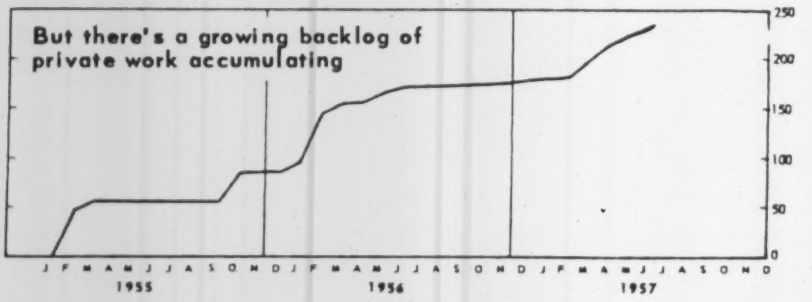
• **Sharp drop recorded**—For example, during the first five months of this year, atomic construction contract awards of $31.1 million were 16% higher than the award total of $26.9 million during the first five months of 1956.

But the current year's seven-month figures show that total awards of $46.6 million for atomic construction are now 36.9% behind the $73.6 million total in the same period of 1956.

There also was a shift in the importance of public and private awards. During last year's first seven months, private awards took the spotlight with a total of $50.6 million contrasted with public contract awards of $23.3 million.

But now at the end of seven months a change is noted. This year, private contracts tallied in at $13.3 million while public awards amounted to $33.3 million. This represents a drop of 74.8% from last year's private total, while public contracts scored a 43% increase over the corresponding period of 1956.




250
200
150
100
50
0
But there's a growing backlog of private work accumulating
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1955
1956
1957

• **One award starred**—The change can be partially attributed to the lack of a private award comparable to the Yankee Atomic Power Project in Massachusetts in June, 1956 that totaled $34.5 million.

Private awards, however, are still a strong contender in the atomic construction picture.

The backlog of private atomic construction jobs is rising rapidly, while every month this year saw private work put under contract. This is in sharp contrast with the spotty award picture of 1955 and 1956.

Since January 1955, private atomic projects valued at $181.6 million have gone under contract. During the same period, federal atomic projects placed under contract amount to $206.9 million.

Encouraging is the buildup of the private nuclear construction backlog which now stands at $233 million.

ects. One is for construction in Puerto Rico of a 15,000 to 20,000 kw water-cooled demonstrator reactor. It would cost $9 million.

Another new project is a $40 million prototype reactor—natural uranium, graphite-moderated, gas-cooled—at the Arco, Idaho, National Reactor Testing Station.

A third calls for $15 million to begin work on a reactor (probably at Hartford) that would use plutonium as its primary fuel.

The new reactor at Arco will be designed to produce 40,000 kw, the plutonium reactor, 15,000 kw.

The bill provides for no public sale of the power, but rather for its use by AEC on the site.

The bill would lend fresh help to private power groups now struggling to get a solid foothold in the new industry.

It approved, altogether, about $50 million of private industry assistance—in waivers on fuel use charges, plus direct research and development aid—for two private groups—one a combine of Florida utilities; the other, a Midwestern combine headed by Northern States Power Co., which has applied for a license to build a reactor near Minneapolis.

AEC had sought authority also to give $4.2 million of help to the Power Reactor Development Corp., a combine headed by Detroit Edison Co., for its Michigan reactor. But the subcommittee reduced that sum to $1.2 million, apparently because PRDC now is involved in a prolonged government hearing on charges (brought mainly by labor units and public power partisans) made to the effect that its proposed design is hazardous.

Atomic Projects in the U. S. 1955-57

As reported by Engineering News-Record in thousands of dollars

	Contracts Awarded			Backlog of Private Projects	
1955	Private	Public	Total	Proposed	Cumulated
Jan.	$.....	$59,900	$59,900	$.....	$.....
Feb.	2,000	896	2,896	1,000	1,000
Mar.	59,500	4,639	64,139	47,000	48,000
Apr.	.....	1,059	1,059	6,500	54,500
May	45,000	2,344	47,344	.....	54,500
June	.....	7,225	7,225	.....	54,500
July	.....	1,681	1,681	.....	54,500
Aug.	.....	12,760	12,760	.....	54,500
Sept.	500	4,787	5,287	.....	54,500
Oct.	.....	31,101	31,101	.....	54,500
Nov.	4,300	925	5,225	30,000	84,500
Dec.	.....	3,904	3,904	.....	84,500
Year	$111,300	$131,221	$242,521	$84,500	
1956					
Jan.	$.....	$702	$702	$.....	$84,500
Feb.	250	1,097	1,347	10,000	94,500
Mar.	.....	737	737	50,400	144,900
Apr.	.....	3,210	3,210	9,310	154,210
May	11,000	9,930	20,930	2,000	156,210
June	34,500	6,069	40,569	10,500	166,710
July	4,848	1,539	6,387	4,750	171,460
Aug.	.....	4,587	4,587	.....	171,460
Sept.	.....	1,077	1,077	.....	171,460
Oct.	6,400	8,842	15,242	500	171,960
Nov.	.....	735	735	1,000	172,960
Dec.	.....	3,828	3,828	300	173,260
Year	$56,998	$42,353	$99,351	$88,760	
1957					
Jan.	$1,500	$7,542	$9,042	$6,550	$179,810
Feb.	2,700	1,091	3,791	.....	179,810
Mar.	1,000	3,729	4,729	1,000	180,810
Apr.	120	10,515	10,635	17,000	197,810
May	550	2,402	2,952	17,000	214,810
June	910	2,399	3,309	11,000	225,810
July	6,500	5,627	12,127	7,100	232,910

The Turnpike Trial

Pennsylvania jury finds Evans, four others guilty

Thomas J. Evans, former chairman of the Pennsylvania Turnpike Commission, was one of five defendants found guilty by a Dauphin County Criminal Court jury of conspiring to defraud the commission of $19.5 million.

Four others were aquitted in the first of a series of trials tying pike officials, engineers and contractors to what Democratic Governor Leader has repeatedly called, "the greatest swindle of our time." Convicted along with Mr. Evans were two other former members of the commission and two officials of the Manu-Mine Research and Development Corporation of Reading.

The ex-commission members found guilty by the jurors were: Paul J. McNeill of West Reading, formerly finance officer of the commission and James X. Torrance of Export, Pa.

The others convicted were Charles W. Stickler, Jr., Mr. Evan's nephew, who was Manu-Mine president and Clayton A. Landsidle, who formerly had served as the company's general manager.

E. J. Donnelly and C. U. Hudert, both of J. E. Greiner Company of Baltimore, former consulting engineer for the commission were acquitted of conspiracy charges as were Theodore S. Paul, formerly head of the commission's legal bureau and John D. Paul, former assistant chief construction engineer for the pike agency.

Mr. Evans and Mr. Torrance were also found guilty of misconduct in office, while Mr. Stickler and Mr. Landsidle were hit with verdicts of guilty on charges of cheating by fraudulent pretense.

The false pretense convictions against Mr. Stickler and Mr. Landsidle could carry sentences of up to five years imprisonment and fines of $5,000. The conspiracy charge carries a maximum two-year sentence and a $500 fine. The penalty for misconduct in office is not statutory but may be determined by the court.

Seventeen other defendants, including suspended turnpike chairman, G. Franklin McSorley are under indictment but have not yet been tried. The indictments stem from a contract granted without competition to Manu-Mine for drilling shafts and filling mines penetrating the northeastern extension of the turnpike. Manu-Mine received $6.8 million in payment for work which the state contended would have exceeded $19.5 million and which, it was charged, was largely unnecessary (ENR Feb. 7, p. 27).

Pipeline Planned

Proposed gas line to run from Canada to California

Plans to build a $330 million, 1,300 mile pipeline system to transport natural gas from fields in Alberta direct to California have been announced by Normal R. Sutherland, president of Pacific Gas & Electric Co.

Initial deliveries of 400 million cu ft per day are planned for 1960 through a line exceeding 30 in. dia.

The project will require authorization of governmental agencies of Alberta and Canada, of the Federal Power Commission and the California Public Utilities Commission. PG&E will be assisted in the design, engineering and construction of the project by Bechtel Corp. The line will cross several mountain ranges, including the Canadian Rockies, and will cross portions of British Columbia, Idaho, Washington and Oregon, terminating at an existing PG&E transmission network station at Antioch.

The Canadian gas would augment the present supply from California fields and from fields in Texas and New Mexico, helping to meet the mounting fuel and energy needs. The latter fields now provide about two-thirds of the company's daily gas resources. Additional quantities from these fields will be purchased in the future as they become available.

Some 750 million cu ft per day is being imported at present through a 34 in. pipeline, and the capacity of that line will be increased to more than 1 billion cu ft per day late in 1958 on completion of a recently started expansion.

Operating gas utility companies in southern California, whose gas imports from Texas and New Mexico equal PG&E's, have been offered 50% of the deliveries from Canada. PG&E has worked out cooperative agreements with Canadian Western Natural Gas Co., Ltd., Calgary, and Northwestern Utilities, Ltd., Edmonton, which are gas distributing utilities in Alberta, for purchase, sale and transmission of gas.

Blyth & Co. will assist in the financing of the project, which will involve offering securities in considerable amounts to the investing public in both Canada and the U. S.

If the line is approved, Mr. Sutherland points out that the new market provided "will induce substantial investment of additional capital for further exploration and development in Canada.

An "Action Agency"

Columbia Basin Compact would construct dams

Study of the possibility of creating an "action agency" under Columbia Interstate Compact provisions for multi-purpose development of Pacific Northwest water resources was directed by the compact commission in a Spokane meeting late last month.

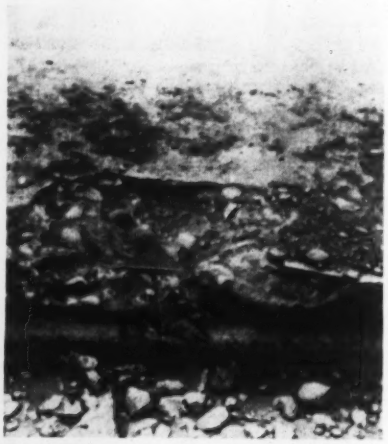
The group set up a special committee to study and report at a meeting in Reno in September on "the possibility of creating an action agency under compact provisions which would be empowered to acquire, finance, construct, operate and administer multi-purpose projects and related facilities within the Columbia Basin."

Consideration of a change to an action agency marked a decided departure from the commision's thinking since its origin in 1950. The new direction reflects, in part, changes in commission appointees following the change from Republican to Democratic administrations in both Oregon and Washington State.

The commision has held 35 meetings in its effort to agree on a compact since it began its work—informally in

A 2 FT x 2 FT HOLE remains where lightning struck an exposed steel reinforcing bar and entered the concrete slab.

MELTED OFF the steel grid, a piece of transverse steel reinforcement can be seen at the center of the torn concrete.



DEBRIS is scattered about the 12 ft wide, 9 in. thick concrete pavement which failed with the oxidation of all the reinforcement.

Lightning Strikes, Destroys New Pavement

Lightning recently destroyed 700 ft of newly laid concrete pavement on a construction job in Elk County, Pa., the Department of Highways reported.

During an electrical storm near Ridgway, lightning struck an exposed steel reinforcing bar, raced through connecting bars and oxidized all bars under the section. The nine inch thick concrete pavement was believed to be so weakened as to require replacement

Eleven holes, each about two feet by two feet, were torn in the pavement. The damaged section contained approximately 2,000 tons of concrete and 15 tons of steel.

The project is intended to replace and relocate a badly worn section of the heavily traveled U. S. Route 219, which traverses west-central Pennsylvania from the Maryland line to the New York line.

M. & S. Construction Company, Inc. of East Pittsburgh, has been rebuilding the 7.08 mile section—a federal-aid project—at a cost of $1,447,297.

The damaged stretch was the final segment of one of the two new lanes being put down. The last lane had not yet been placed.

1950, officially by passage of a Congressional consent act in 1952.

The latest draft, approved by the commission last December, was submitted to Washington and Oregon legislatures this year and refused.

Local Group to Study Snake River Hydro Site

The recently incorporated Lewis-Clark Generation & Transmission Cooperative of Walla Walla, Wash., is reported to be interested in constructing the federally authorized 270,000 kw Little Goose hydroelectric project on the Snake River near Walla Walla.

Although Congress has approved the project, no funds have been voted. Congress would have to "de-authorize" the project, just as it did for Priest Rapids Dam, if the new cooperative decides to proceed.

The cooperative was formed by 12 rural electrical cooperatives in eastern Washington, eastern Oregon and Idaho. Largest of the 12 is Inland Power & Light, Spokane. All or most of the 28 REA groups within 150 miles of the Little Goose damsite might participate.

Pennsylvania Won't Bar Out-of-State Designers

Pennsylvania Gov. George M. Leader has vetoed a bill that would have required all engineers and architects holding work contracts with the commonwealth to be registered in Pennsylvania.

He said it would merely have written an existing practice into law, but pointed out that "there is no provision for those exceptional cases where the commonwealth might be obliged to employ an architect or engineer from another state who is both qualified and available at the time he is needed . . . It is more important that every taxpayer receive the full value of his dollar than that one resident be favored with a contract.

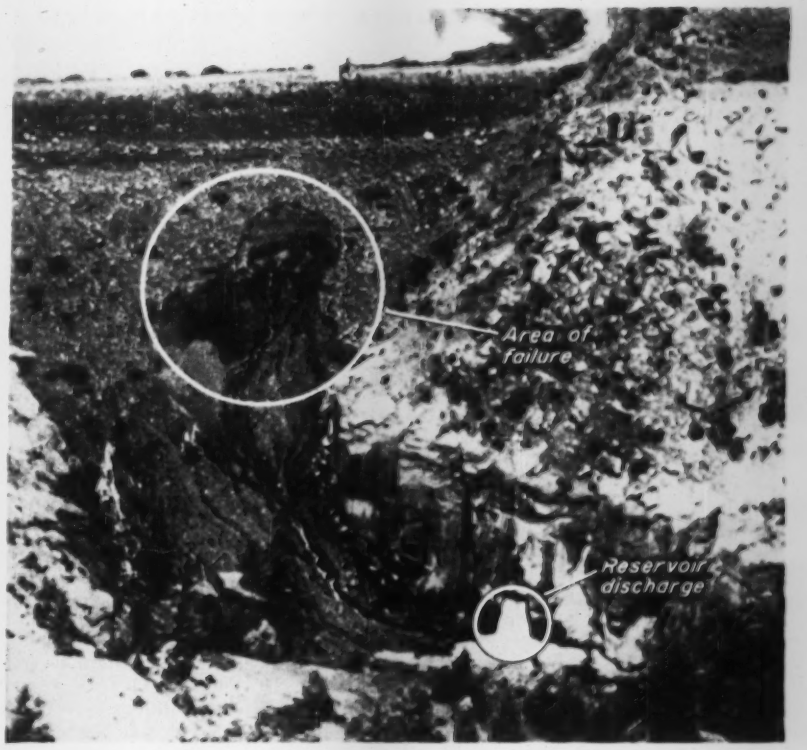
"Furthermore, legislation of this type will invoke the passage of retaliatory statutes in neighboring states, thus more than offsetting whatever advantages would be gained by this bill for the members of these professions," Governor Leader said.

Flies Sight River Bridge And Close It to Traffic

Because someone forgot to turn off the lights, swarms of flies descended on a Mississippi River bridge last week, near La Crosse, Wis., and caused a temporary closing.

Flies landing on the roadway were crushed, causing a slippery condition. One accident resulted involving a semi-trailer truck and three autos.

The traction problem was solved with two truck loads of sand.



Governor demands inspection of dams after . . .

Failure in Colorado Earthfill Dam

A dangerous slough two weeks ago in a 45-year-old hydraulic fill dam on Alamosa Creek, a tributary of the Rio Grande, in southern Colorado, caused 400 residents of the town of Capulin to flee their homes for two days. Although the threat was not as serious as first thought and no real damage occurred, the failure touched off a demand by Colorado Gov. Steve McNichols for immediate inspection of all earthfill dams in the state.

The leak in the dam—which forms Terrace Reservoir, filled at that time to its 18,000 acre-ft capacity—was discovered 70 ft below the crest of the 168 ft high dam. Water seeping through had softened the lower toe of the dam causing a section of between 4,500 and 5,000 cu yd to slip. For a time there was fear that the Rio Grande Valley from southern Colorado to Albuquerque, a distance of 250 miles, would be flooded by the additional water from the reservoir since all streams feeding the Rio Grande have been bank-full since last winter's record snow.

State engineer J. E. Whitten, who estimates the leak flow at 1½ cfs, says that the exact cause of the sloughing can not be determined until the water level is lowered to a point where equipment can move into the damaged area, which was not possible before this week.

Lowering of the reservoir has begun, although the starting discharge rate of 1,100 cfs had to be cut back to 900 cfs when farmers complained that the flow was damaging their farm lands.

At the time of its construction in 1911-12, the 600 ft long dam was rated one of the largest hydraulic fill dams in the world, according to engineer Whitten. It is made up of nearby mountain earth washed into place and covered with rock riprap on its water face. Slope of downstream face is 2:1, upstream 2½:1. Crest is 17 ft wide. The dam is owned by the Terrace Irrigation District and stores water for irrigating about 15,000 acres in the Alamosa Creek valley.

There are about 2,800 dams in Colorado. "We ought to take a real good look at every one of them," said Governor McNichols after the Terrace Reservoir scare. "If we don't have enough engineers to do the job, we ought to hire consultants," he added.

Mr. Whitten agreed that all dams should be inspected once a year, but said that with his staff of only seven engineers it would be impossible to inspect all the state's dams. He also pointed out that it would be difficult to spot potential trouble under dry conditions.

Rocky Reach Dam Is Bid Again

Estimate up, bids down in second try at same contract —power and cost-sharing agreement reached

Rocky Reach Dam Builders—using its own plan for river diversion instead of the engineer's design—last week came in with apparent low bid of $52.4 million for the final-stage contract for Rocky Reach Dam on the Columbia River in Washington. This combine (Arundel Corp., L. E. Dixon Co., the Hunklin-Conkey Co., and American Pipe & Construction Co.) already holds contracts for first-stage work on the Chelan County Public Utility District of Wenatchee's estimated $250 million hydroelectric project.

Should the bidder's design for the cofferdam system, be accepted and contract awarded to it, the combine will beat out Merritt-Chapman & Scott Corp.'s low bid of $53.9 million submitted on the engineer's design of the diversion scheme. One other bid also had been offered last week for the contract on the 775,000 kw hydroelectric scheme.

This is the second time that the dam-completion contract has been bid. On June 20, the PUD rejected all bids since they were above the engineer's estimate and state law prohibits award under such circumstances (ENR June 27, p. 19). The PUD then invited the new proposals that were opened last week.

• **Estimate went up**—First estimate had been set as $55.3 million by Stone & Webster Engineering Corp., consulting engineers for the job. Bids received, and rejected, were: $58.6 million by joint-venture of Morrison-Knudsen, Henry J. Kaiser, Peter Kiewit Sons and Perini; $61.3 million by Rocky Beach Dam Builders; and $63.5 million by Merritt-Chapman & Scott.

While the bids last week dropped about $9 million, a new estimate set at $61.3 million was revealed. It reflects a slight revision upward by Stone & Webster, but mostly the addition of a contingency fund by the PUD, resulting in a very safe margin to comply with the state law. The contingency fund represents the additional costs that would be incurred if the project were to be delayed a year through failure to receive an acceptable bid.

• **Power disposal**—On another front of the Rocky Reach project, the Chelan PUD recently reached an agreement with the Aluminum Co. of America to take 23% of the power for its nearby reduction plant. In return, Alcoa will pay 23% of all costs of building and operating the hydroelectric project over a 50 year period. The agreement is contingent upon a provision that final costs, including financing expenses, do not exceed certain as yet unannounced limits.

The Alcoa share of Rocky Reach generation will total 165,000 kw. This will include 78,000 kw of firm, 22,000 kw of high-availability interruptible and 65,000 kw of combined peaking and dump power.

With the firming up of its Wenatchee power, Alcoa is planning a $10 million expansion of its plant by mid 1961. Expansion will involve addition of a fifth potline.

The aluminum plant now uses about 60,000 kw of interruptible power from Bonneville Power Administration, which will be partially replaced by 28,000 kw of firm and 22,000 kw of interruptible from Rocky Reach. Estimated costs of Rocky Reach power exceed BPA rates, according to an Alcoa spokesman, but costly power cut-offs will be avoided.

Pelton's Ski Jump Spillway Nears Completion

This view of Portland General Electric Co.'s Pelton Dam on the Deschutes River in central Oregon shows the ski jump type spillway that will drop fish into deep part of the river, keeping them away from the rocks.

Contractor Guy F. Atkinson Co. of South San Francisco has completed 98% of the concrete work on the arch dam itself, which rises 204 ft above bedrock, tapering from a thickness of 26.5 ft at the base to 8 ft at the crest. A 120,000 kw powerhouse (center) is beginning to take shape and is to be in operation by late next year.

The $25 million Pelton project, stalled for years by opposition from fishing interests, will have other fish protection facilities, including a ladder and a skimmer device.

Delaware Construction Will Total $74.2 Million

Delaware's legislature, during a final one-day session, passed bills for construction having a total value of $74.2 million. School construction took the spotlight with the legislature authorizing $44.5 million for this purpose, the largest such program in state history.

Also approved were:

• A $22 million road construction program.

• An omnibus bond bill providing $5.8 million for capital improvements at various state agencies.

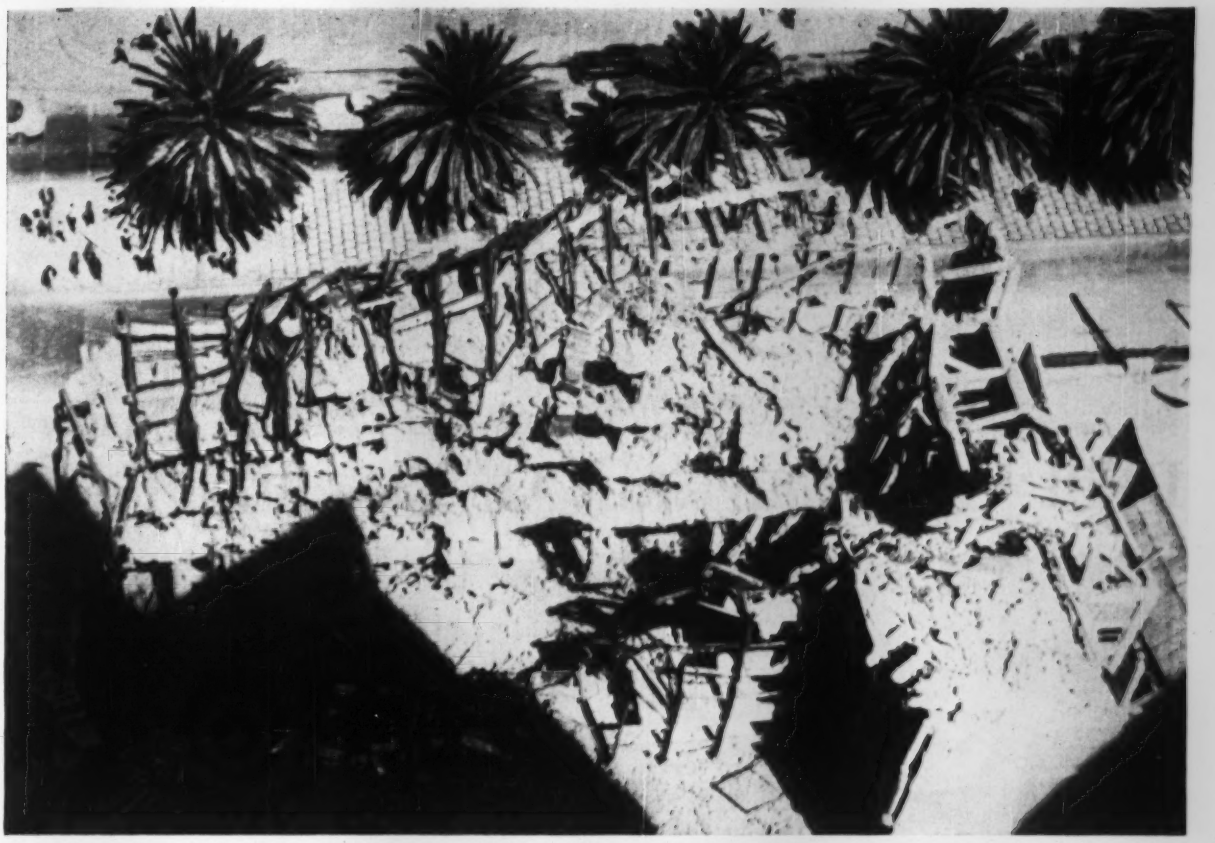
• Construction of a $1.9 million headquarters and laboratory for the State Board of Health.

The school construction bill was approved despite protests of an economy bloc that attempted to push through a substitute program of only $5 million.

The legislature also appropriated $250,000 to establish a revolving fund for the State Board of Education for purchase of school sites and payment of architects' fees.

Another bill provides that the 1950 census be used as the base for allocating state funds to communities for street maintenance.

The legislature defeated a bill calling for a $3 million bond issue to provide the Delaware facilities for the proposed Cape May, N. J.-Lewis, Del. ferry. It was the bill's second defeat.



STRUCK DOWN WHILE UNDER CONSTRUCTION this steel frame was loaded with the concrete floors but had no walls to give it further rigidity. It was one of a dozen . . .

Mexico City Buildings Hit by Earthquake

The high intensity earthquake (estimated at 7 on the Mercalli Scale of 12), which rocked Mexico City in the early morning hours of July 28, tested the strength of one of the world's most notable collection of modern multi-story buildings. Many passed the test but a number did not. About a dozen buildings, including two large ones, collapsed, and many others were damaged to such a severe extent that an undetermined number may have to be demolished.

Such features of the local architecture as cantilevered balconies, columnless facades and exterior stairways will have to be re-examined in the light of frequent failures, which littered sidewalks with debris. Long-span theater framing also showed up as a weakness. The problem of enough separation between buildings with differing modes of vibration to keep them from banging against one another also appeared as a result of the quake damage.

Prevalent, too, as a result of the whipping back and forth of the tall buildings, were out-of-plumb elevator shafts and broken plumbing risers. A number of buildings, giving the appearance of being relatively undamaged, will, in fact, be subject to costly repairs from these causes.

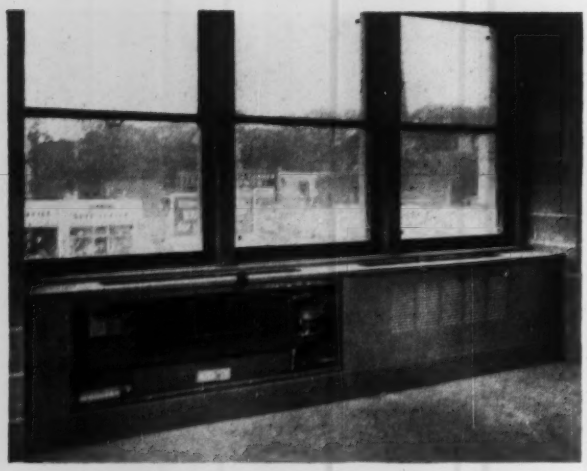
The fact that the city's tallest building, the 44 story Latin American Tower, did not even suffer broken windows may be attributed to the fact that, alone among the city's buildings, its pile foundations go deep to hardpan under the old lake bed on which Mexico City is built.

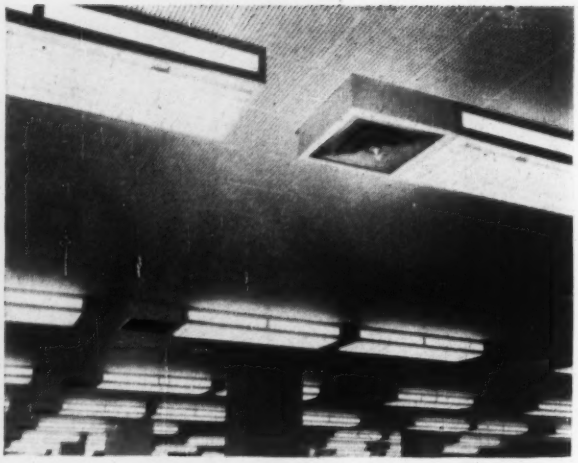
Felix Candela, prominent Mexico engineer and architect, well known for his concrete hyperbolic paraboloid roofs (ENR May 16, p. 36), reported to ENR that none of these shell structures fell or even cracked.

All hotels, and most buildings generally, suffered plaster and window breakage. The Continental Hilton suffered perhaps the most among the hotels. Sprung elevator shafts and broken plumbing practically put the establishment out of commission. This new building did not crack, as news stories reported, but separated from the adjacent old Continental Hotel to which it was connected. The crack started at the base and widened to measure about a yard across the roof line.

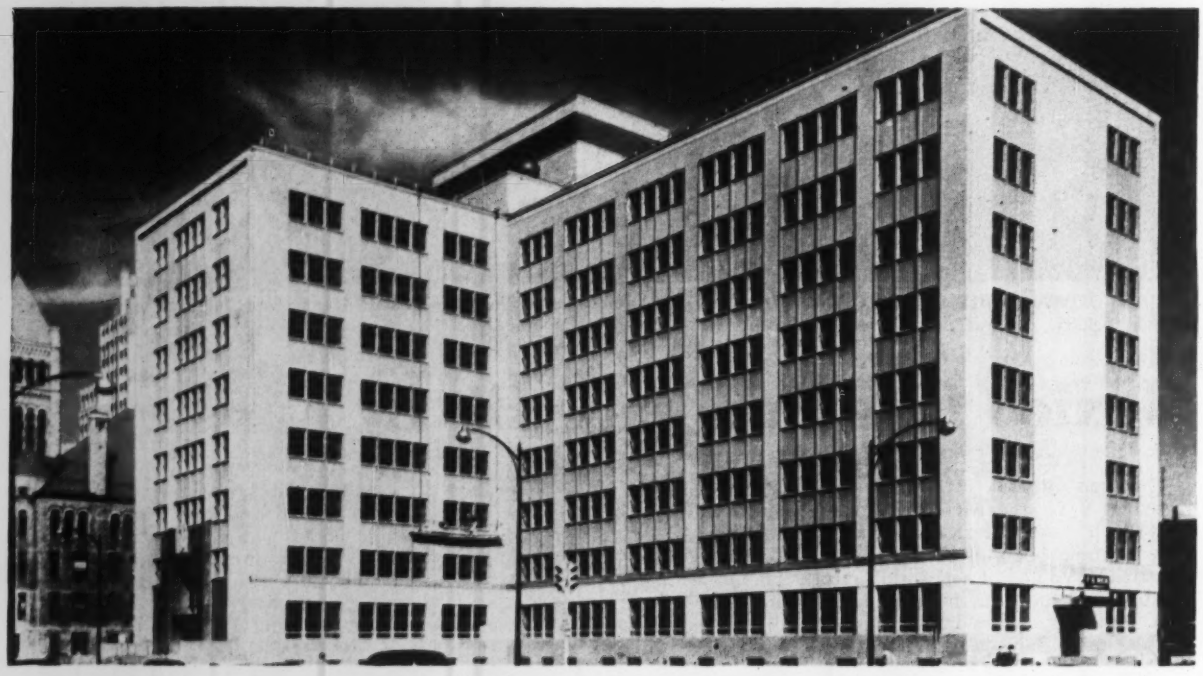
Of the two buildings, which completely collapsed, an apartment house of six stories less than six months old was reported to have exhibited the use of poor materials in that the concrete crumbled into a sandy mass with evidence of insufficient cement. The other building, also six stories high, had a steel frame, and was under construction, with the floors but not the walls in place. A movie theater may also be considered as completely collapsed, since only the concrete walls which supported the steel roof trusses remain standing.

The epicenter of the earthquake was west and south of Mexico City, between Cuernavaca and Acapulco. In some areas it is said to have reached 10 on the Mercalli Scale.





Built From Start for Air Conditioning...



...State Building Sets New Pattern

Charles S. Kawecki
Chief Architect
New York State Dept. of Public Works
Albany, N. Y.

The new State Office Building in Syracuse, N. Y., is the first structure built by New York State to be air conditioned at time of erection. Eight stories high, the new office building is estimated to cost about $4.5 million and will provide 136,000 sq ft of usable floor area.

In the next 10 years, New York State will construct $500 million worth of buildings, of which most office structures, hospital suites and laboratories will contain year-round air conditioning.

As an employer, the State of New York has long been aware of its need for top personnel and their accompanying requirements for optimum working conditions. Of prime concern in any modern office is controlled air comfort—a fact underscored by the increasing trend toward air conditioning in business offices all over the country. Placed in competition with private business for quality personnel, the state insists that all new government office space is to include year-round air conditioning.

In addition, estimates of increased employee efficiency due to air conditioning range as high as 25 to 30%. This fact, plus reduced maintenance costs of the buildings make the investment in air conditioning a nominal one when compared to the benefits derived

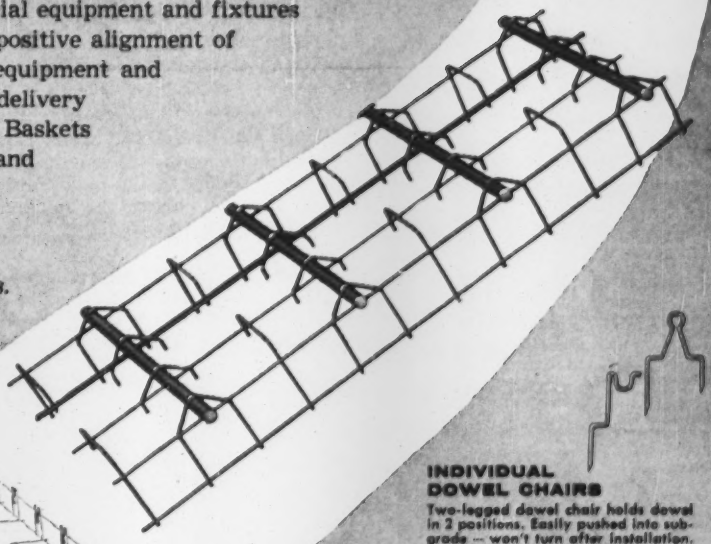
UNIVERSAL PRODUCTS
for highway construction

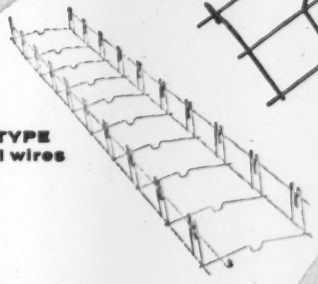
DOWEL BASKET ASSEMBLIES

Universal Dowel Basket Assemblies are designed and fabricated to specifications. Special equipment and fixtures guarantee accurate spacing and positive alignment of dowels. High speed production equipment and modern facilities insure prompt delivery of your requirements. Universal Baskets are approved by Federal, State and private authorities for highway and airport construction.

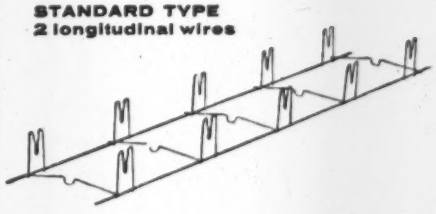
Let us quote on your requirements. Write for complete details today.

HEAVY DUTY TYPE
Maximum strength and support





STANDARD TYPE
4 longitudinal wires



STANDARD TYPE
2 longitudinal wires

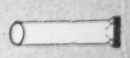
INDIVIDUAL DOWEL CHAIRS

Two-legged dowel chair holds dowel in 2 positions. Easily pushed into sub-grade — won't turn after installation. Wide range of heights.

Single Leg Dowel Chair permits quick snap-in of Dowel. Sizes to support Dowel from 3" to 6" above sub-grade.

STAKE PINS

Keep Dowel Bar Assemblies in place during the pour. Lengths from 4" to 15" in ¼" increments.



DOWEL SLEEVES

Metal Dowel Sleeves for covering ¾" Dowel Bars; overall length covers 2½" or 3" Dowel. Special sizes and lengths available.

HOOK BOLT ASSEMBLY

For providing required tieing element along longitudinal joint. Eliminates necessity of bending tie bars or drilling road forms.

UNIVERSAL FORM CLAMP CO.

GENERAL OFFICES AND FACTORY: 1238 N. KOSTNER • CHICAGO 51, ILLINOIS

BRANCH OFFICES AND WAREHOUSES:

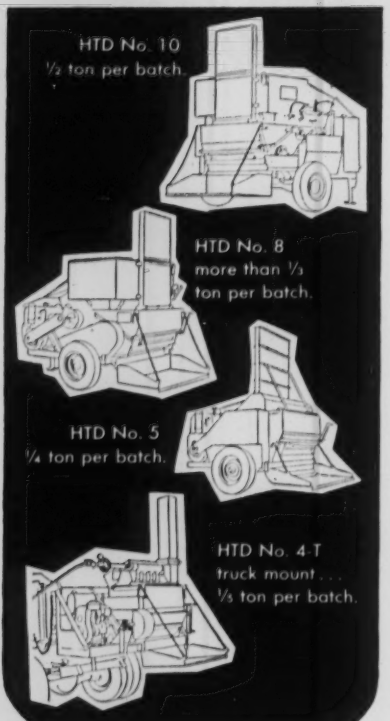
SAN LEANDRO, CAL.	LOS ANGELES, CAL.	HOUSTON, TEX.	CLEVELAND, OHIO	BALTIMORE, MD.	ATLANTA, GEORGIA
2061-9 Williams Street	13210 S. Figueroa St.	2314 Preston Ave.	24901 Lakeland Blvd.	1020 N. Kresson St.	1401 Howell Mill Rd., N.W.

UNIVERSAL FORM CLAMP CO. OF CANADA, LTD. • 226 Norseman Street • Toronto, Ontario

DISTRIBUTORS IN PRINCIPAL CITIES

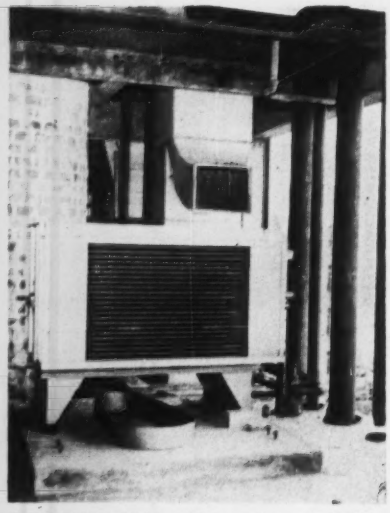
FOR LOW-COST
HOT OR COLD
PAVING OR PATCHING
IN ANY SEASON

McConnaughay
ASPHALT MIXERS



For details and specifications write . . .

McCONNAUGHAY MIXERS, INC.
LAFAYETTE, INDIANA
National distributors: Asphalt Equipment Co.
3314 Cherry Lane, Fort Wayne, Indiana



CENTRAL FAN COIL unit on each floor air conditions all interior areas.

The building will unify and centralize all state services for the Syracuse area. An additional wing can be added to the northside similar to the main entrance wing. This will increase the usable floor space of the building by 20%.

• **General design**—Indicative of what future state office buildings may be like, the Syracuse building has a structural steel frame. The exterior is granite, brick and limestone with stainless steel spandrels and trim. The floors are steel decks with cement fill. First floor areas and corridors are mostly terrazzo. Asphalt tile has been used on the remaining floor areas. Acoustical tile covers all ceilings.

The building is wired to handle electronic business machines. Most lighting fixtures are four-lamp fluorescents—6 units in each 20 x 20 ft module. A central control center in the basement operates all outlets in the building with the exception of the upper-most floors. Special outlets in the top portion of the building are controlled from the penthouse floor.

The Syracuse office building is given complete year-round air conditioning through a high-pressure distribution system with 576 under-window units.

• **Perimeter cooling**—For the perimeter areas of the building, outside air is drawn into central primary air conditioners through a rainproof louver and screen located in a 9th floor penthouse. It is filtered of dust and heated and humidified or cooled and dehumidified, as the season requires.

A high-pressure centrifugal fan distributes conditioned air to header ducts on the 9th floor leading to vertical air risers that extend the height of the building. Through branch ducts, high-velocity conduits feed conditioned air to air-control cabinets furred into the walls.

The conditioning units operate by induction. The conditioned air distributed by the vertical risers enters the unit's plenum where operational sound is dampened. This primary air is ejected by nozzles inducing a large quantity of room air to enter the unit enclosure. The secondary or room air is heated or cooled as it passes over a water coil to produce the desired room temperature.

By regulating the flow of chilled or warm water, the room units provide individual temperature control independent of the remainder of the floor. The conditioned mixture of primary air and re-circulated room air discharges vertically through adjustable grilles on top of the unit. Vertical air diffusion avoids undesirable drafts and air stratification.

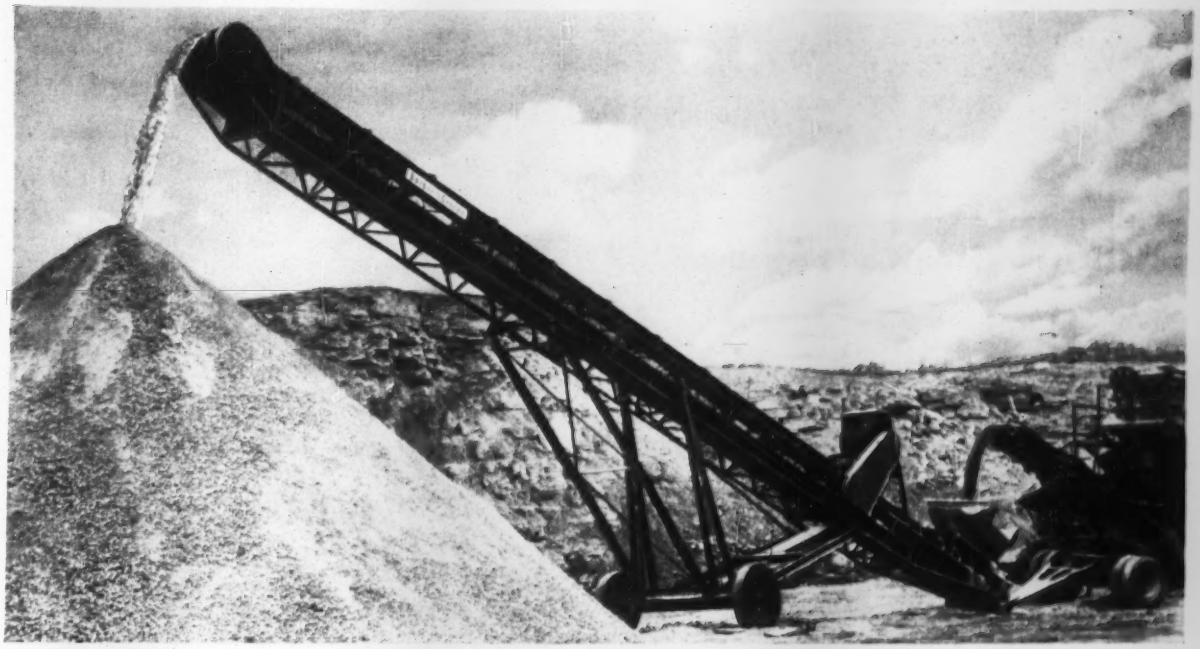
• **Interior conditioning**—The interior zones of the building are served by eight fan coil units, located back of the elevator wall shaft on each floor. They condition and circulate air through overhead ducts. Conditioned air is discharged through diffuses set in the ceiling to interior areas not served by the perimeter zone.

Located in the basement are two centrifugal refrigerating machines with a capacity of 300 tons each. These machines provide chilled water for equipment serving both the perimeter and interior zones.

• **Financing**—New York State is financing its office building in Syracuse through a lease-purchase agreement with the State Employees Retirement Fund. Under this plan, the state borrows money from the retirement fund to purchase the land site and construct the building. The building and land are deeded to the retirement fund under a lease agreement for 20 years, during which time the loan is repaid. When amortization is complete, ownership of the building reverts back to the State of New York.

The State Department of Standards and Purchase acts as leasee and rents the entire building. Repayment is made through the Capitol Construction Fund, money for which is appropriated by the New York State legislature. Operating costs for the building, estimated at $300,000 for the fiscal year starting April 1, 1957, have been charged against the Department of Public Works.

F. D. Rich Co., Inc., Stamford, Conn., was general contractor, K. A. Taylor Inc., Syracuse, N. Y. was heating and air conditioning contractor. Carrier Corp. supplied the air-conditioning equipment. The building was designed and construction supervised by the New York State Department of Public Works, Division of Architecture. Carl W. Larson was the state architect.



Rowe Construction Co., Bloomington, Illinois, uses the Model 374 Conveyor, one of many types and sizes of Barber-Greene portables.

The president of Rowe Construction Co. reports

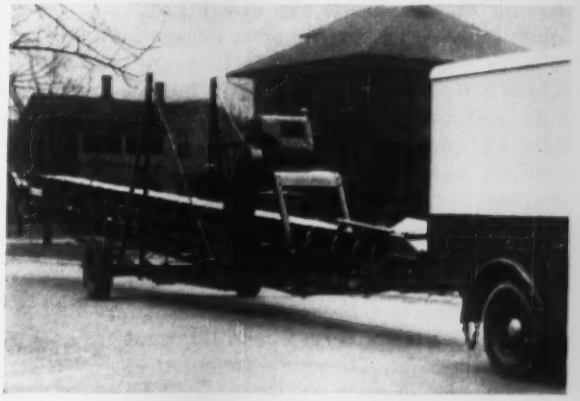
"Our next portable conveyor will be another Barber-Greene"

"We have given our Barber-Greene conveyor four years of hard service and its performance has been tops. We produce sand and gravel for highway departments and for our own use. So we move our plant three and four times a year. Towing our conveyor from job to job presents no problem at all. We just hitch it up to a truck and move out.

"And it was no big job to lengthen our conveyor from 51 to 60 feet. All we did was order a nine-foot intermediate section and bolt it into place. All carriers, returns and decking were already in place and aligned.

"With this kind of reliability and easy flexibility, we feel sure our next portable conveyor will be a Barber-Greene."

Straight-forward reports like D. H. Rowe's provide the proof of the superior performance and widespread acceptance of Barber-Greene conveyors. Handling coal, sand, gravel and other bulk materials, these versatile conveyors operate on a virtually automatic basis . . . cut labor costs substantially.



Not just portability, but road-ability is one of the many features that save time and money for the Rowe Construction Co.

66-21-PO

Literature shows the many superior features of Barber-Greene portables. Write for your copy.

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Tallest TV Tower in New England

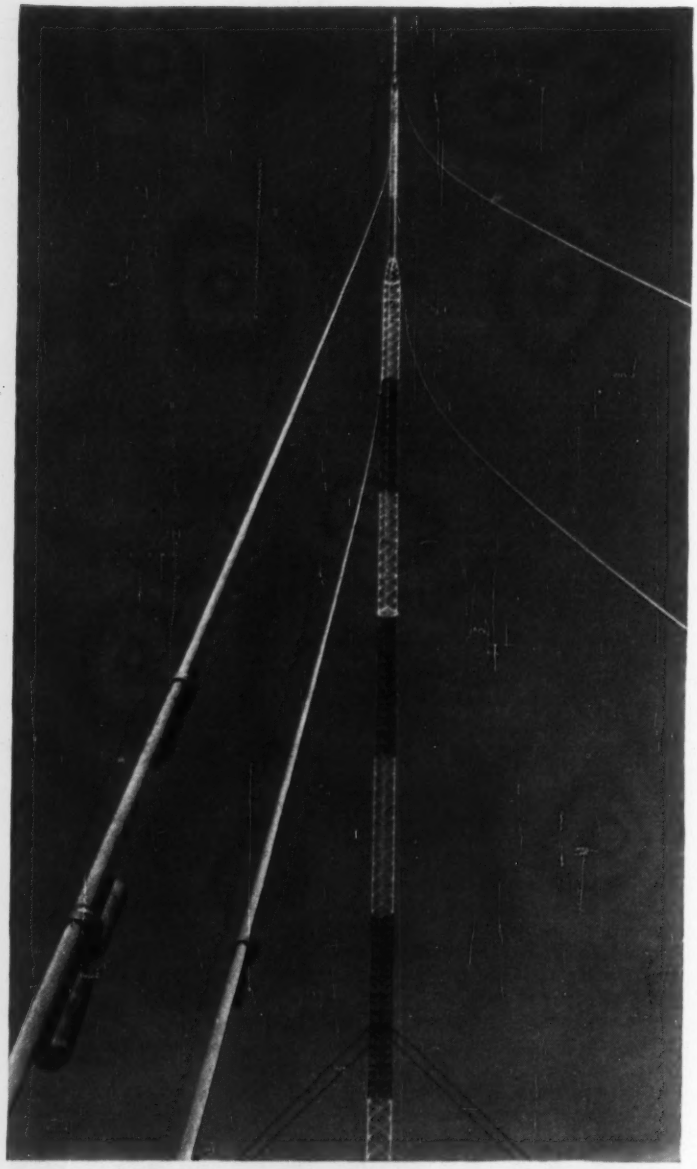
Supported by 22,200 feet of

Tiger Brand Guy Lines

The new 1199-foot WBZ-TV Tower, Boston, Massachusetts, is already the tallest in New England and is designed for later extension to an over-all height of 1499 feet. This would exceed the height of the Empire State Building by 27 feet. When the tower is extended, it will carry three TV antennas on top and three FM antennas, side-mounted.

A major problem was to design the 320-ton tower to withstand extreme wind velocities up to 165 mph. This was solved by supporting the tower with 24 Tiger Brand Galvanized Guy Lines 1⅞" and 1 13/16" in diameter. These are anchored in concrete weighing up to 1000 tons and extend as far as 890 feet from the tower base.

For engineering help in designing tall towers, come to American Steel & Wire.



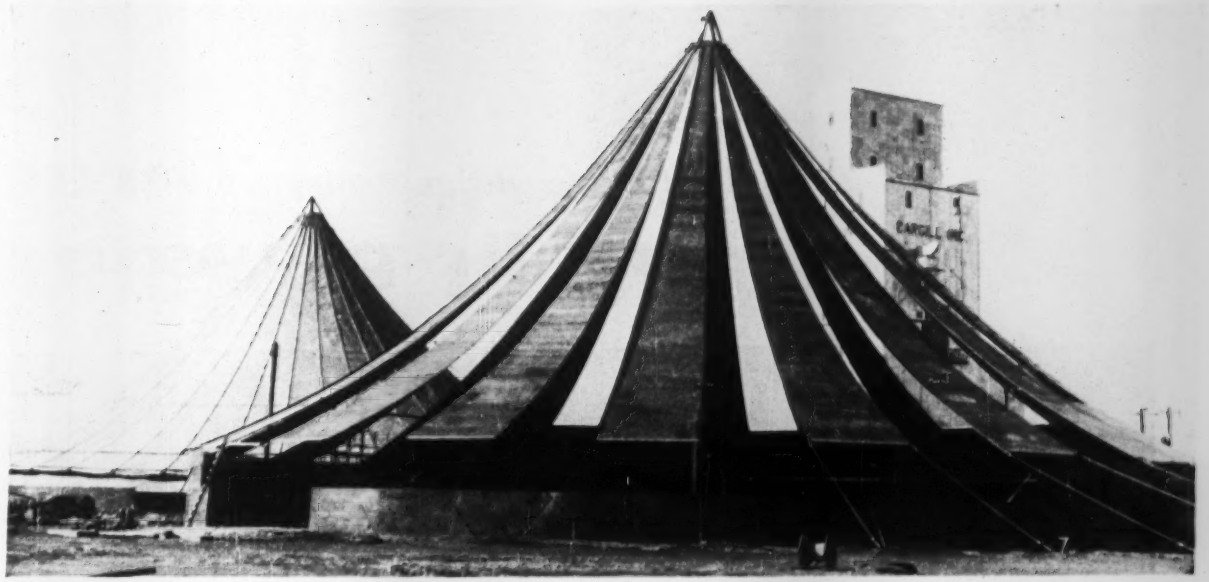
New 1199-foot tower for station WBZ-TV, Boston, Mass. Designed and fabricated by Dresser-Ideco Company, Columbus, Ohio

AMERICAN STEEL & WIRE DIVISION
United States Steel, General Offices: Cleveland, Ohio
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

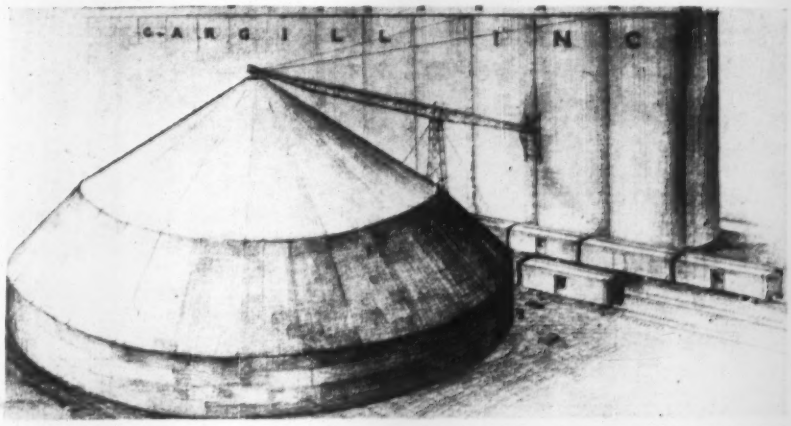
Excellay Preformed

UNITED STATES STEEL



TENT-LIKE steel structure at Crookston, N. D., is under construction. Roof sections are welded along seams to insure tight roof.

Novel Structures for Grain Storage



CONICAL SHAPED storage bin under construction at Maumee, Ohio, will be steel sided with an air supported roof of flexible fabric. It is being built as a pilot study.

Looking for easier and cheaper way of storing grain, Cargill, Inc., a large Mid-western grain handler, has developed and built several experimental structures of light-gage steel or a combination of steel and fabric construction.

One of these structures is a tent-like building 169 ft in diameter with a storage capacity of 500,000 bu. Its roof construction is made up of 40 triangular sections of 18 ga steel. These roof sections are spot welded to steel T bars suspended from an 86 ft high pole at the center of the building. The T bars extend 147 ft in an arc from a ring at the top of a pole to the ground. The triangular sheets, each 114 ft long, taper from a width of 13 ft at the bottom to a point at the top. The sheets are seam welded along the edges to insure a tight roof.

The roof overhangs a 169 ft circular steel wall 13 ft high, which forms the wall of the storage bin. A 4 in. space is left between the top of the wall and the roof structure. Piers to which the T bars are anchored are located about 40 ft outside the wall of the building.

Floor construction of the building consists of a 4 in. wire-fabric reinforced concrete slab. Footings at the edge of the 169 ft dia floor are 1 ft wide by 2 ft deep.

• **Roof assembly**—The roof was formed by fastening the T bars to the center ring, which was then raised to the top of the pole. The roof sheets were pulled to the top of the pole separately, each balanced by a sheet on the opposite side, and tack welded to the "T" bar.

Cargill expects the cost of the structure to be about 25% of the per bushel cost required for comparable storage in conventional construction.

Another storage structure being built by Cargill in Maumee, Ohio, will be a circular, conical shaped building 200 ft in diameter and 100 ft high. It will be steel sided with an air-supported roof of glass-fiber reinforced plastic. The wall will be vertical for the first 20 ft and slope inward for the next 34 ft. Both vertical and sloping walls will be supported by 62 trusses on the interior periphery.

• **Air tight building**—The pneumatic-supported roof will extend in a cone shape 46 ft above the top of the steel walls. The entire structure will be air tight.

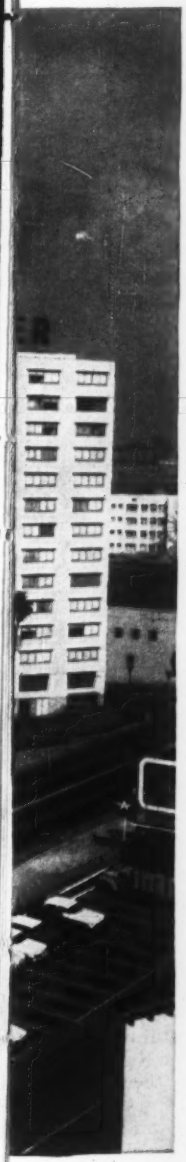
Grain will enter the storage bin at the top through an opening designed to prevent pressure inside from dropping while grain is being introduced.

While Cargill already has built and is using several of the tent-like steel structures in several parts of the country, the air-supported structure is a pilot study and until a cost analysis is completed no other structure of its type is planned.

Los Angeles Hotel Statler demonstrates **Three of fir plywood**

Smooth architectural concrete is achieved at lower costs with high-density overlaid plywood.

key advantages concrete forms



1. time and labor savings

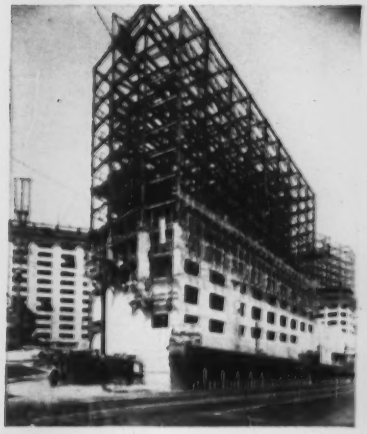
Job superintendent J. L. Morris estimates a saving of 20% in time and labor through use of overlaid fir plywood concrete form panels on the Statler Hotel, Los Angeles. Forms were built faster and easier because of the large panel size; leakage was virtually eliminated.

2. economy through re-use

Plywood forms gave 13 re-uses on exterior walls, one on each floor. Inside, forms averaged 15 re-uses. Panels of 5/8" high-density overlaid plywood were wiped clean with oily rags between pours.

3. smooth concrete surfaces

A minimum of touching-up was required before finishing because of the high quality surface provided by the overlaid panels. Joint lines on interior ceilings were spackled. On exterior walls, joints were accented with strips nailed to inside of forms.



Overlaid fir plywood forms were slipped up the building as exterior walls were poured, one per week. Same panels were used for the entire job, on 2 x 4 studs, 12" o.c., backed by 2 x 4 walers, 24" o.c.

Interior ceilings were smooth, ready for finish, except for the joint-lines at panel edges. These were spackled, and the surface was painted with a flat paint.

DFPA TESTED QUALITY

ALWAYS SPECIFY BY DFPA GRADE-TRADEMARKS

INTERIOR PLYFORM®—standard concrete form grade made with moisture-resistant glue. Gives multiple (10-12) re-uses.

EXTERIOR PLYFORM®—standard form grade made with waterproof glue. Gives maximum (25 or more) re-uses.

OVERLAID FIR PLYWOOD—special panel with hard, glossy fused resin-fiber surfaces. Waterproof glue. Up to 200 re-uses.

FOR YOUR FILES: Complete application-specification-design portfolio assembly. Write (USA Only) Douglas Fir Plywood Association, Tacoma 2, Washington, Dept. 135.

HOTEL STATLER
LOCATION: Los Angeles, California
ARCHITECTS: Holabird & Root & Burgee, Chicago
CONTRACTOR: Robert E. McKee, Gen. Contractors, Inc., Los Angeles

RAILWAY BRIDGE OVER FRANCE'S RHONE RIVER MARKS . . . .

Bold Use of Prestressed Concrete

Five rigid frame spans built by cantilevering, using movable forms suspended from temporary steel trusses

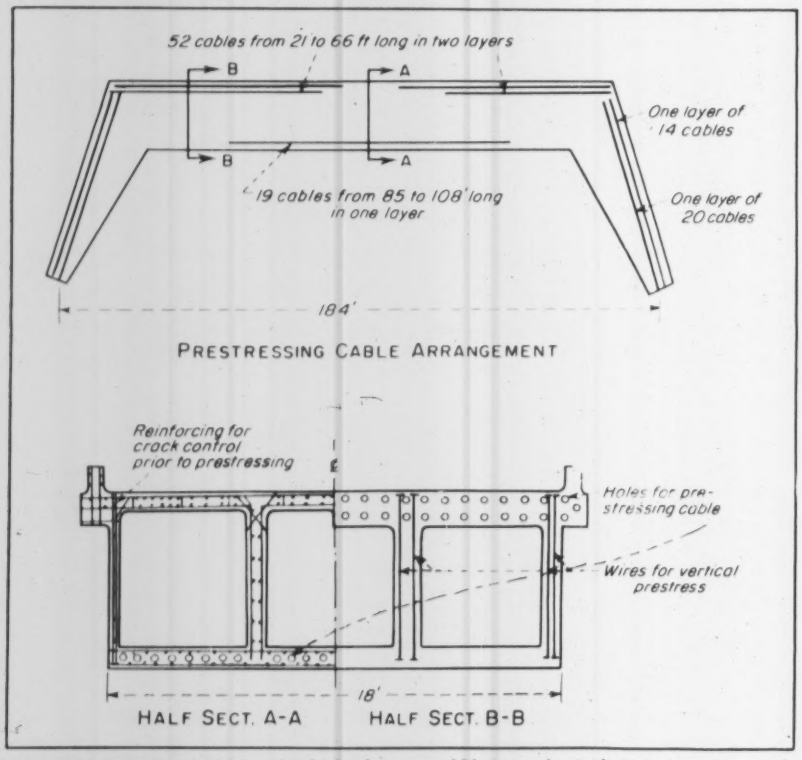
After two years of service the first major railroad bridge in the world to be built of prestressed concrete has fully justified the hopes and allayed the fears of its owners, the French National Railways (S.N.C.F.).

Spanning the Rhone River at the village of La Voulte, about mid-way between Lyon and Avignon, the bridge contains five 184 ft span rigid frames of hollow box cross-section. It was built without falsework in the river, by using movable forms suspended from overhead temporary steel trusses. The project turned out satisfactorily in the construction stage, and now the operating experience gained over a short period of service seems to mark the bold venture as a success.

Adoption of such a design was preceded by extensive studies by the owner's engineers. These studies and accounts of the design and construction by S.N.C.F. engineers and the contractor were published in the French magazine "Travaux", and it is on these that this article is based.

The bridge rests on the piers of an earlier structure, which was destroyed by bombing during the war. This original bridge had been built of cast iron arches in 1861; but in 1923, to permit the bridge to carry modern loads, the ironwork, supplemented by some welded rods, had been encased in concrete. Probably because the destroyed bridge had been constructed as a series of concrete arches, the first design for a replacement also contemplated using concrete arches, but of a through rather than a deck type.

This kind of structure, however, had several disadvantages—a derailed train could wreck an arch, falsework in the swift waters of the Rhone would be required for construction, and the thrust from the arches would be applied rather high up on the piers. All of these disadvantages could be avoided if prestressed girders could be used. In addition, the cracking in long reinforced concrete girders, which had provided the S.N.C.F. with a serious maintenance problem on some of its other bridges, could be avoided in employing a prestressed design.



PRESTRESSING CABLES, of which there are 191 in each rigid frame span, are of buttonhead type and of various lengths so they could be tensioned in groups as the span was built out.

The particular prestressed design proposed by the contractor, L'Entreprise Boussiron, was therefore adopted. Because the depth available for the structure, between the elevation of the rails and the clearance required for river shipping, was too small (9.4 ft) to admit a girder that would safely span the 197 ft center to center of the piers, a 184 ft rigid frame, with inclined legs, became the solution. Its girder could thus be short enough that it could be built with a constant depth or thickness of 7.8 ft, and still not be subject to excessive bending moment at the center of the span.

• **Design details**—This girder is a hollow box 18 ft wide, divided into three compartments by longitudinal walls. Six crosswalls are also used to supply transverse rigidity. The inclined legs have the same width as the girder but vary in thickness from 11.4 ft at the top to 4.8 ft at the bottom, where they are joined to the pier. The 26 ft opening over the piers between adjacent rigid frames is spanned by simple slab and girder construction.

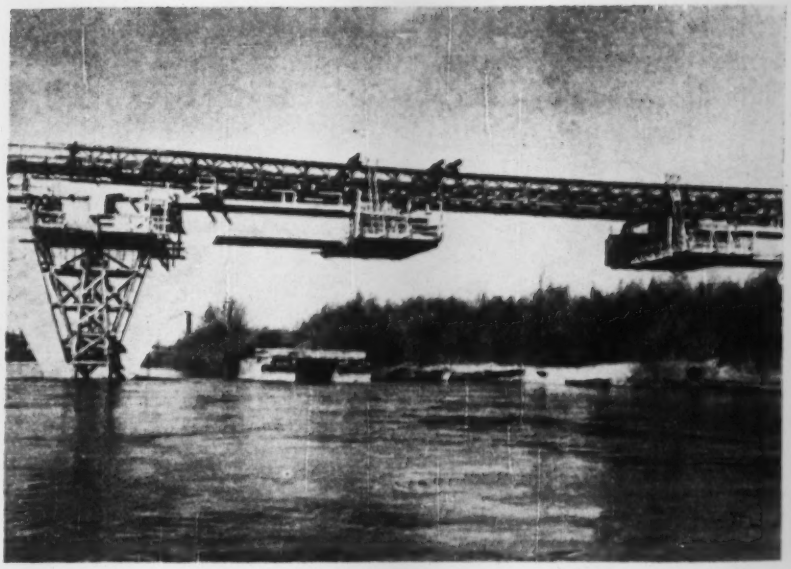
Various thicknesses of concrete are used in the members of the frame. For the girder the top and bottom slabs are 15 in. thick for about 25 ft at the ends and 7.5 in. thick elsewhere. The wide wall thickness varies from 6 to 12 in., while the inner longitudinal walls, being approximately under the rails, are slightly thicker—8 to 16 in. The cross walls are 8 in.

The walls of the legs vary similarly in thickness, and at the base terminate in a solid reinforced concrete shoe section attached to the pier by spiral rods forming a hinge.

Design stresses were set at 1,700 psi compression on the concrete and 114,000 psi tension on the steel of the tendons. By careful selection of aggregates and cement, controlled proportioning and continuous testing and sampling, concrete with an ultimate strength of 6,800 psi was developed.

Correspondingly, steel prestressing cables were chosen capable of sustaining a 140,000 psi pull, which was approximately that required to give the 114,000 psi ultimate tension after estimated losses of about 18,000 psi from steel relaxation and from flow and shrinkage in the concrete. These cables contain 16 wires of 0.25 in. dia with ends in the form of button heads to hold them against the anchorage plates. The cables, of which there was a total of 955 of various lengths, were inserted into holes formed in the members by metal tubes, and post-tensioned after the concrete had set.

In addition to the longitudinal prestress by cables, a 140 psi vertical prestress was applied by single wires in the walls of the girder over a distance of 35 ft from either end. These wires were also equipped with button heads.



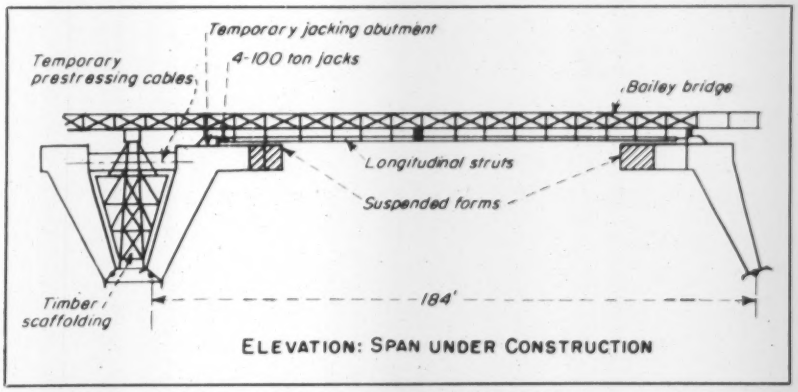
CONSTRUCTION BRIDGE of Bailey trusses supported movable forms in which spans were concreted in 9 ft increments simultaneously from each end.

One of the objectives in adopting a bridge of this type and of these dimensions was that it could be built without recourse to falsework in the river. The basic piece of construction plant to accomplish this purpose was the steel Bailey bridge of wartime fame, units of which could be launched from pier to pier and thus serve as a support from which the concrete formwork for the permanent bridge could be suspended. And since the strength of the Bailey bridge was strictly limited (even though three lines of trusses were used at each side), short movable form sections were used, and each concrete span built out from its piers in 9 ft increments.

• **Construction methods**—Launching the Bailey bridge across a span opening was a relatively simple operation. Nevertheless it required some planning and finesse, since the opening measured 197 ft, and cantilevering without falsework was not possible. The solution was to anchor a floating falsework tower at the center of the span, and to reduce the weight of the Bailey bridge by leaving off one line of trusses at either side until the bridge had been launched across. The entire operation took about a day, after which the falsework tower was towed ashore until work on the next span required it.

Support for the Bailey bridge was provided by timber scaffolding erected on the piers. To this scaffolding was also attached the forms for the legs of the rigid frames, which were concreted as soon as the Bailey bridge was in place to furnish a roadway from the mixing plant on shore.

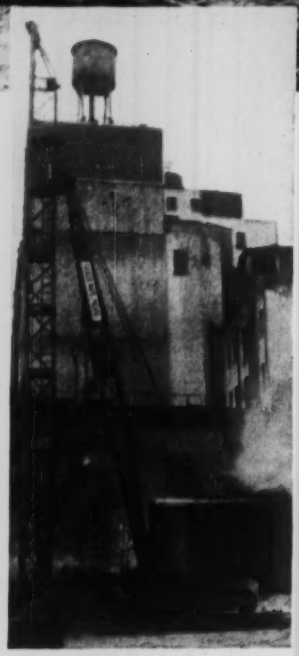
When the time arrived to start concreting of the girder of a span, the



ELEVATION: SPAN UNDER CONSTRUCTION

DETAILS of construction plan used on La Voulte Bridge. Note particularly the longitudinal struts and the temporary prestressing cables over the piers, which, in combination, furnished a tieback for the cantilevering arms of the bridge span.

ONE SPECIALIST DRIVES PILES—SHEETS—BRACES—UNDERPINS



Project: Fashion Institute of Technology for New York City Board of Education
Architects: DeYoung, Moscowitz & Rosenberg, New York City
Engineers: Severud-Elstad-Krueger, New York City
General Contractor: Depot Construction Corp., New York City

Spencer, White & Prentis is equipped to give complete service in everything connected with foundation work. On this job, for example, we were called upon to:

- **Drive 8, 10, 12 and 14-inch steel bearing piles to rock.**
- **Underpin 4 old buildings through wet running sand to rock, using Pretest cylinders.**
- **Install sheeting and bracing systems along buildings.**

Wouldn't such an all-inclusive service be advantageous to you? It is based on close to 4 decades of experience, specialized personnel and all the necessary specialized equipment.

CATALOGUE ON REQUEST

Spencer, White & Prentis INC.

FOUNDATIONS · PILING · UNDERPINNING · SHORING · COFFERDAMS · SPECIAL SERVICES

10 EAST 40th STREET, NEW YORK 16, N. Y.

DETROIT: 2053 PARK AVE. • CHICAGO: 228 NORTH LaSALLE ST. • WASHINGTON, D. C.: TOWER BLDG.
OF CANADA: 700 BAY ST., TORONTO • 2032 ST. CATHERINE ST. WEST, MONTREAL

. . . Prestressed bridge

Bailey bridge was called upon to perform a third vital function, in addition to supporting the movable forms and serving as a concrete supply roadway. This was to carry beneath its bottom chord, a pair of longitudinal struts, extending from pier to pier. The combination of these struts with the completed part of the structure on the piers furnished a stable falsework frame which supported the cantilever arms of a span until they could be joined at the center of the span.

This support was made effective by the operation of four 100 ton jacks installed at each end of the longitudinal struts. These jacks reacted against temporary abutments attached to the top of the inclined legs of the span under construction. By temporarily connecting these legs to the legs of the adjacent spans on the same piers, a stable V-shaped frame was provided to resist the push of the jacks. The temporary connection, across the top of the V, consisted of both beams and a series of 12 prestressed cables.

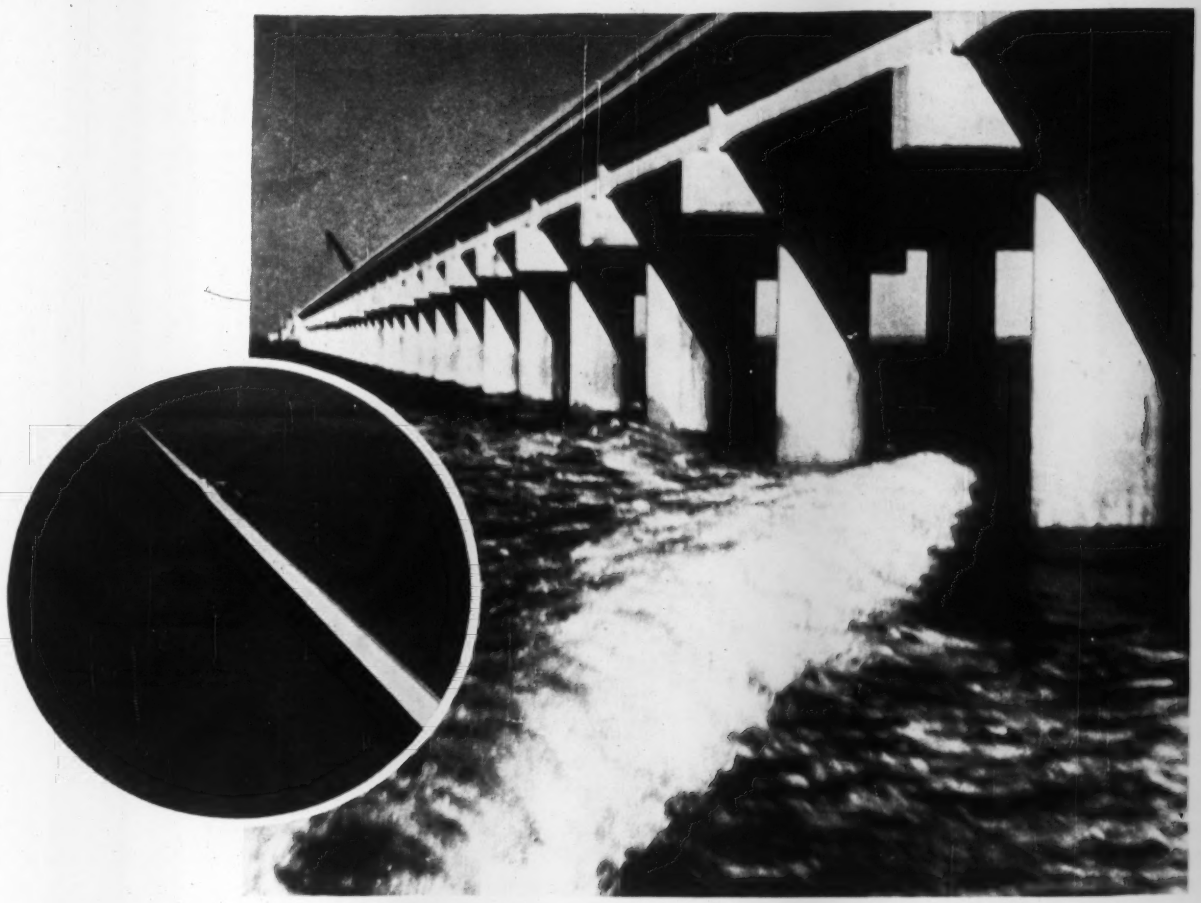
As soon as a 9 ft increment of girder was cast it was allowed to set for three days or until the concrete had attained a strength of 3,000 psi. Then four prestressing cables were tensioned to join this increment firmly to the one preceding it.

With this accomplished the forms could be moved ahead for the next increment, but only after enough load had been jacked into the longitudinal strut to counter the weight of the 9 ft increment of girder which would no longer be supported by the forms. The first two increments of girder at the ends of the span weighed 45 tons each, the remainder 27 tons.

When the work on a span reached the point where the last two of the 16 increments required were being concreted, 300 ton jacks were inserted at the center at the level of the upper slab of the box girder. Then as the pressure from these jacks was increased, that in the 100 ton jacks in the longitudinal strut was lowered until they could finally be removed. The bridge span was then self-supporting as a three-hinged frame.

Finally the span was loaded with the permanent ballast for the rail track, the center joint was concreted and the continuous cables in the bottom slab of the box tensioned. By this means the span was transformed to its permanent state, namely that of a two-hinged rigid frame.

The five spans of the bridge were each built in this manner, work starting on one bank of the river and advancing to the other bank.



It's a Beautiful Bridge

Built 100% of Ideal Cement Concrete

...Lake Pontchartrain Causeway in Louisiana...World's Longest Highway Bridge...Completed in Record Time

Through the mass production of precast, prestressed concrete bridge units prefabricated on shore, the 24-mile Lake Pontchartrain Causeway was completed in one-fourth the time and at a much lower cost than ordinary bridge construction techniques would have required! Even the tough 19-month schedule which was set up was beaten by four months!

Ideal's plants at Baton Rouge, Mobile, and Houston, and cement terminal at New Orleans just across Lake Pontchartrain from the construction site assured a uniform flow of cement to keep the project going regardless of the severe cement shortage.

High praise is due the contractor—Louisiana Bridge Company, a joint venture of Brown & Root, Inc. of Houston, and T. L. James & Company, Inc. of Ruston, Louisiana—and Palmer and Baker, Inc. of Mobile, consulting engineers.

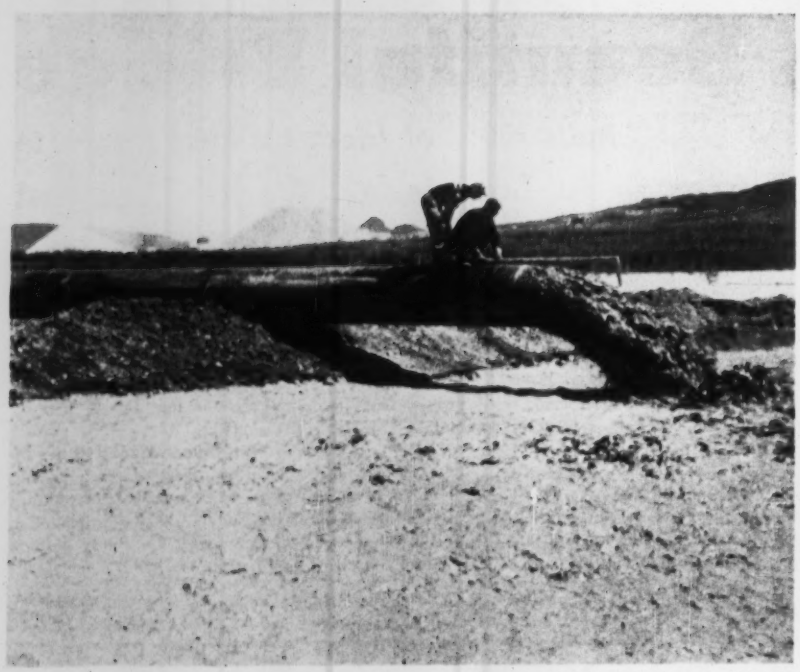
The Lake Pontchartrain Causeway and its use of precast, prestressed concrete demonstrates a practical solution to all similar bridge construction problems where beauty, completion schedules, freedom from maintenance, economy, and the ready availability of materials are important.

PORTLAND IDEAL CEMENT

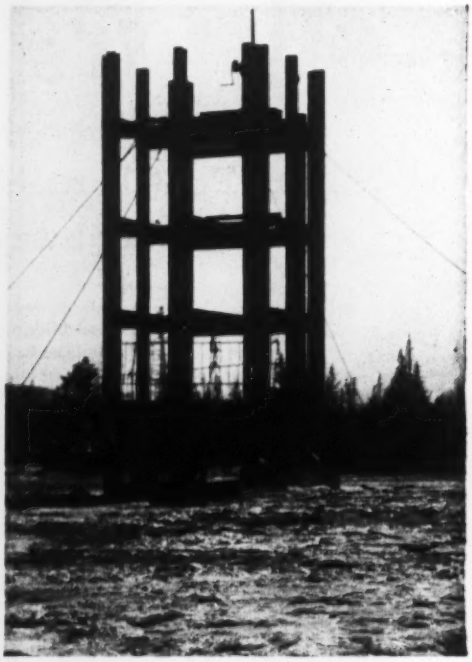
IDEAL CEMENT COMPANY

14 Plants and 2 Cement Terminals Serving the Nation, Coast to Coast and Border to Border

SLOPES ARE WASHED DOWN by suction dredge, with pump turned around, during dredging project at Black Lake, Quebec, to uncover asbestos deposit. New mill to process ore is at right.



SEA OF MUD spews out of 32 in. pipeline carrying dredged material from lake to disposal area. A total of 35,000 ft of pipe run to three disposal areas.



DECANTATION TOWER in muck disposal area picks up water which is then . . .

A 500 acre lake and 37 million cu yd of overburden are slowly disappearing in a $32.5 million operation where . . .

Men Move Water, Earth to Get at Ore

The asbestos is there—enough for 40 years of mining operations. But it's sitting under a 500 acre lake and 37 million cu yd of overburden. So, to get at the estimated 47 million tons of ore, the lake is being drained as overburden is removed—30 million cu yd by suction dredge and the rest by power shovel and truck.

Lake Asbestos of Quebec, Ltd., a wholly owned subsidiary of American Smelting and Refining Co., New York, is the producer involved in a massive hydraulic operation to uncover the high-grade deposit under Black Lake in the Province of Quebec, Canada. And by the time first asbestos is turned out at the site, in mid-1958, $32.5 million will have been spent in development, including $9.2 million for a 100,000 ton a year mill. The mine is expected to add 7% to the free world's supply of asbestos.

The job is unusual in more than the tremendous amount of material to be dredged. Pulling the 2 mi long, ½ mi wide lake out of the water circuit in an area where the annual rainfall is 44 in. demands replacing its regulating function with some other means. Also, during the dredging work, extensive control of drainage must be practiced in addition to moving the vast quantity of muck to disposal areas.

• **Isolating the lake**—First step, over two years ago, was diverting Becancour River, which feeds the lake, by digging a new river channel 8,000 ft long, bypassing the lake across its north side. Half the new channel is generally 70 ft wide, but the upper half spreads out to 500 ft to form a pond area that will prevent back-water from raising the level of the Becancour. Below the diversion channel the river has been deepened and widened and a dam built to control flow. Ditches dug all around Black Lake intercept surface runoff and carry it to the river channel.

Six miles farther down the river as it flows west a dam constructed at the point where the river enters another lake, Trout Lake, regulates flow downstream during flood stages by forming another flood plain area.

The south end of Black Lake is a narrow neck, originally 142 acres in size, that drained a basin of 8 to 10 sq mi. The neck is now dammed off, and over-flow diverted from the dam to the river by a ditch which also intercepts runoff water from the hills. Since the neck is now a storage basin, it has grown to about 300 acres in size, but will become smaller as it is filled with excavated material and, eventually, mine tailings.

• **Taking it out**—The job of removing the sand, loose mud and boulder clay covering the ore is being done by Construction Aggregates Corporation of Chicago. The firm built a suction dredge specially for the project, brought it in in 11 sections and assembled it on site.

The dredge, electrically powered, measures 140x40 ft and weighs 200 tons. It has a 75 ft cutter and suction ladder, with a cutting head 7 ft in dia and 8 ft long, driven by an 800 hp motor. The loosened material is sucked up by a 30 in. centrifugal pump powered by a 6,000 hp motor. The 10 ft dia pump has a capacity of from 35,000 to 50,000 gpm. Rate of removal runs up to 1.4 million cu yd per month in very soft material; minimum rate is 400,000 cu yd per month; average is 1 million cu yd.

The dredged material goes first through a pipeline carried across a pontoon line, originally 3,200 ft long, and then through 25,000 ft of shore pipeline to the disposal areas. The pipeline is of welded steel, 32 in. in diameter, with ¾ in. thick wall for the lake line and ½ in. thick wall for the shore line.

In addition to the dredge pump, a 30 in. booster suction pump on shore and another 30 in. pump a half mile along the pipeline keep the material moving to the disposal areas.

The scheme for dredging calls for a terraced contour with the cuts arranged to give safe slopes to the solid material left behind, to protect the open pit against mud slides. Controlling the lake level carefully makes this possible. The dredge itself can swing 250 ft from one position, pulling out a bank 250 ft by 30 ft by 8 ft in from 40 to 60 min depending upon material.

Periodically, the dredge pump is turned around, and a stream of water is thrown up on the slopes to wash down the material. This monitoring is also done continuously by two other barges —one with two 3,000 gpm pumps and another with a 5,000 gpm pump that is also used to lower the lake level.

• **Putting it away**—Pipelines carry the dredged material, at 17% solids as it

. . . **SENT THROUGH DITCHES** that carry the water back to lake to keep up a satisfactory dredging level.

TRU-LAY *flexible* PUSH-PULLS

FOR

Remote Control Jobs

on a great variety of

Construction Equipment

Adaptability to all sorts of mechanical situations explains, in large measure, the wide-spread use of TRU-LAY PUSH-PULLS on tractors and their accessories, power shovels, winches, road graders, road oilers, dump trucks, snow plows, engine-driven pumps, rock crushers and other construction equipment.

These dependable Push-Pulls are used for the remote control of hydraulic and air valves, brakes, clutches, transmissions, throttles, chokes, governors, power take-offs, and many other applications.

TRU-LAY PUSH-PULLS are precision products, not gadgets. They provide positive remote-action whether anchorages are fixed or movable . . . for light loads or loads up to 1,000 lbs. . . . and they are effective over short or long distances, up to 150 feet or more.

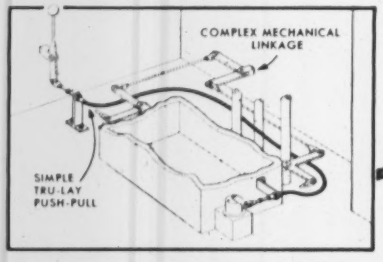
TRU-LAY PUSH-PULLS are dependable and accurate even under the most adverse conditions

They perform effectively under extremes of heat or cold . . . from jet engine temperatures to 70° below zero F. The inner, working member (lubricated for life during assembly) is fully protected by the tough, flexible conduit. Abrasive dusts, dirt and moisture are sealed out. Fittings are cold-swaged to make them integral parts of the control unit. It is a matter of record that we have never heard of a TRU-LAY *flexible* PUSH-PULL wearing out in normal service. Use of these versatile, simple and rugged controls increases ease of operation and means the virtual elimination of maintenance.

Advantages of Tru-Lay Push-Pull flexibility and simplicity are pictured below

Simplicity vs Complexity

Compare the TRU-LAY PUSH-PULL cable in illustration with the mechanical linkage. PUSH-PULLS are simple, have but one moving part, are noiseless and give lifetime service accuracy. Linkages are complex, made of many parts; they wear at many points. Their use brings increased backlash, lost accuracy and vibration rattles.



"Solid as a rod but *flexible* as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, accurate, adaptable, rugged . . . they are the ideal remote controls for construction equipment.

Our DATA FILE will answer your further questions
Write for a copy without obligation

Push-Pull DATA FILE

ACCO

AUTOMOTIVE and AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE

601-F Stephenson Bldg., Detroit 2
2216-F South Garfield Ave., Los Angeles 22 • 929-F Connecticut Ave., Bridgeport 2, Conn.

. . . Dredging a lake

SUCTION DREDGE will remove 30 million cu yd of overburden while power shovels and trucks will account for the remaining 7 million cu yd.

moves through the line, to three disposal areas. The main disposal area is about three miles from the lake and has a capacity of 25 million cu yd. The two other disposal sites are on either side of the diversion channel. All three are diked off, with three dams included in at the main disposal area.

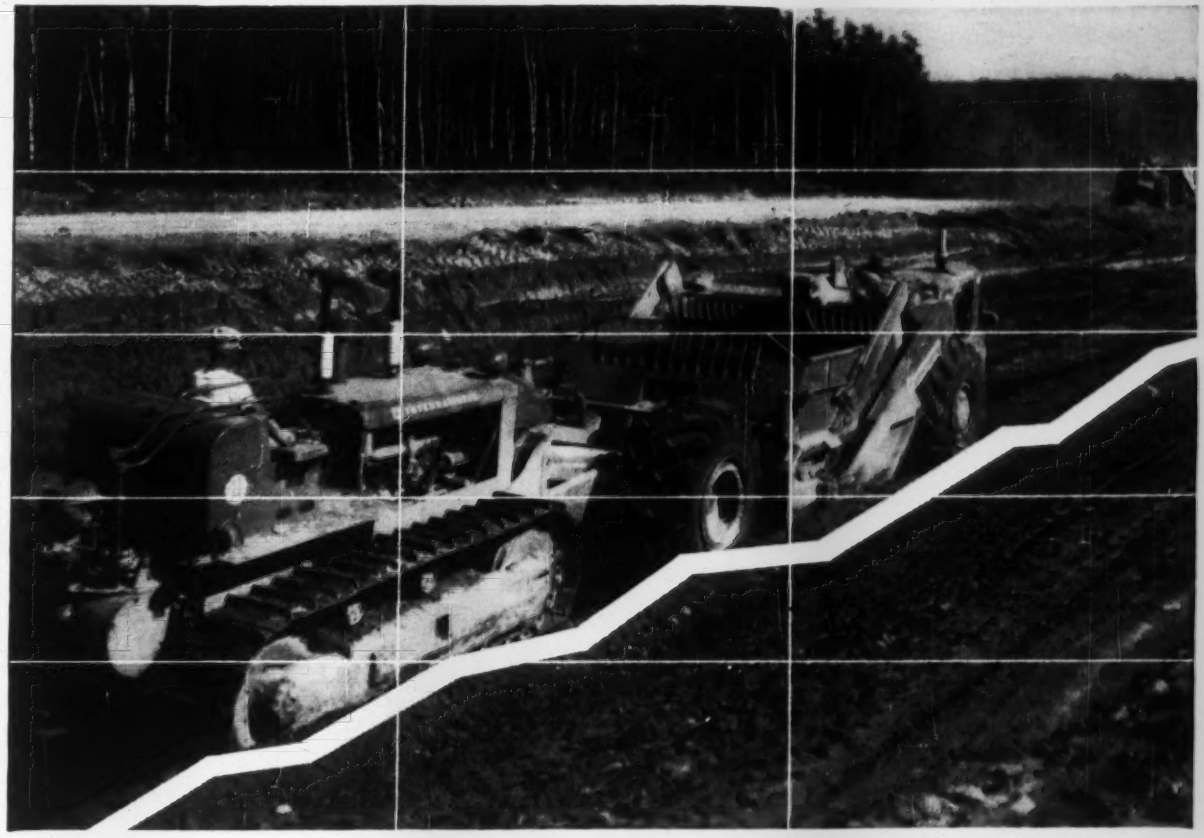
Decantation towers in the disposal areas take water from the dumped mud and silt and send it back to the lake via ditches to maintain a satisfactory level for dredging. The towers are open steel post frames that are gradually closed with timber stop logs to above the settled mud as the water level rises. Freed water flows into the tower, down a 48 in. and a 32 in. pipeline and out to the ditches.

Additional makeup water may be diverted from the river itself through a gate and canal system which can also be used to waste water from the lake to lower the level.

Although dredging will continue until early 1959—some 19 million cu yd have now been removed—open pit mining will start in mid-1958 and go on for about 20 years. After that underground methods probably will be necessary.

Total cost of the dredge, pontoon and shore pipelines, booster stations and power auxiliaries is about $3 million. But when dredging is over, the dredge, the Fleur de Lis, will have paid for itself even if never used again.

Besides the processing mill, which F. H. McGraw Co. of Canada, Ltd., is now finishing up, another construction job done in the Black Lake area was moving 1.9 mi of Highway No. 1 running along the east side of the lake, at a cost of $364,000.



Here's a torque converter equipped TD-24 pushloading an International Model 75 Payscraper for H. F. Radandt, Inc. On a comparative basis, the torque converter drive gives the TD-24 a 30% boost in production.

"Production up 30% with torque converter equipped TD-24"

says Henry L. Radandt, H. F. Radandt, Inc.

Put a tractor with mechanical drive along side a similar one equipped with a torque converter, and you'll notice one important difference right away. *The torque converter equipped machine does more work!*

Superintendent Henry L. Radandt, of H. F. Radandt, Inc., Eau Claire, Wisconsin, is typical of the many construction men who have witnessed this comparison. Mr. Radandt estimates his torque converter equipped International TD-24 Tractor "increases production by about 30% compared to a similar machine with mechanical drive."

The International TD-24 Torque Converter Crawler Tractors prove themselves on every job. The torque converter drive provides up to 6:1 torque multiplication . . . eliminating engine lugging and stalling. It permits the engine to work in its maximum efficiency range at all times . . . making available full engine output regardless of the load. It automatically and instantaneously matches output torque to load demands . . . with gear-shifting minimized or eliminated . . . for increased ease of handling and operator efficiency. It picks up heavy loads smoothly and evenly and without clutch slippage.

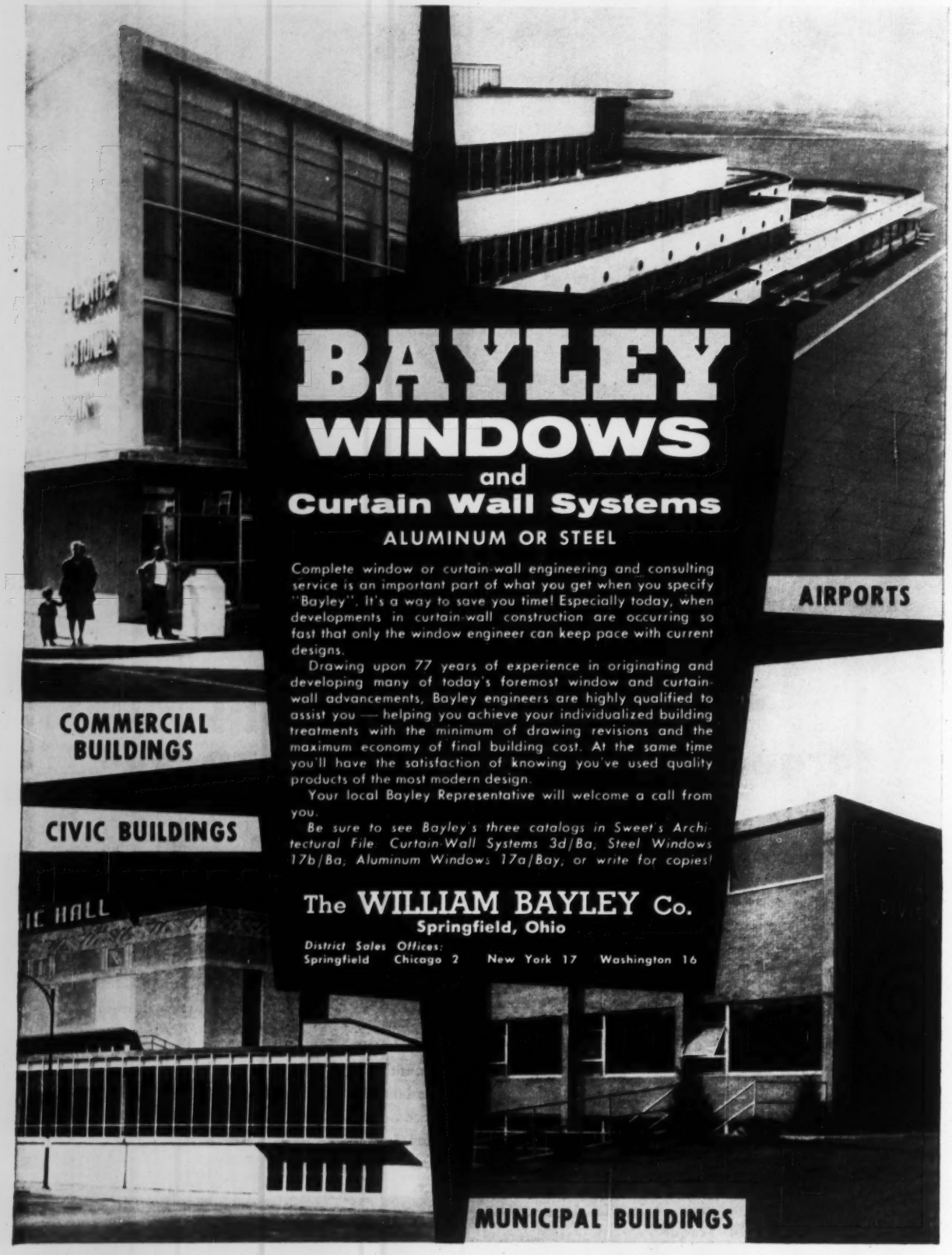
International Harvester Company has standardized on Twin Disc Torque Converter components for its torque converter version of the popular TD-24 Crawler Tractor. Be sure you specify a torque converter in your next TD-24. Talk it over with your International dealer today.

Twin Disc Clutch Company, Racine, Wisconsin; Hydraulic Division, Rockford, Illinois.

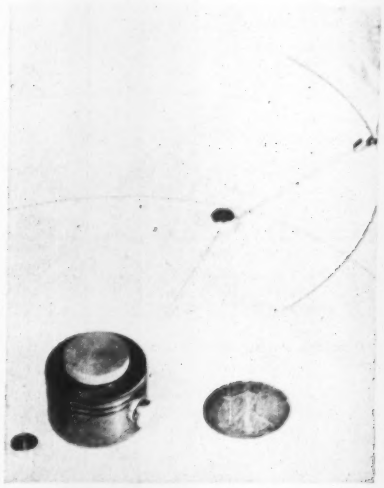
TWIN DISC

TWIN DISC

Torque Converters


BAYLEY
WINDOWS
and
Curtain Wall Systems
ALUMINUM OR STEEL
Complete window or curtain-wall engineering and consulting service is an important part of what you get when you specify "Bayley". It's a way to save you time! Especially today, when developments in curtain-wall construction are occurring so fast that only the window engineer can keep pace with current designs.
Drawing upon 77 years of experience in originating and developing many of today's foremost window and curtain-wall advancements, Bayley engineers are highly qualified to assist you — helping you achieve your individualized building treatments with the minimum of drawing revisions and the maximum economy of final building cost. At the same time you'll have the satisfaction of knowing you've used quality products of the most modern design.
Your local Bayley Representative will welcome a call from you.
Be sure to see Bayley's three catalogs in Sweet's Architectural File. Curtain-Wall Systems 3d/Ba, Steel Windows 17b/Ba, Aluminum Windows 17a/Bay, or write for copies!
The WILLIAM BAYLEY Co.
Springfield, Ohio
District Sales Offices:
Springfield Chicago 2 New York 17 Washington 16
AIRPORTS
COMMERCIAL BUILDINGS
CIVIC BUILDINGS
MUNICIPAL BUILDINGS

ORIGINATORS • DESIGNERS • MANUFACTURERS • INSTALLERS



Coin-Size Beam Compass Scribes 12 Foot Diameters

A turret-shaped metal beam compass not much larger than a fifty-cent piece can disgorge enough tough linen thread to scribe circles up to 12 ft in diameter —as well as many large, complicated involute curves and spirals—according to the maker. Measurements are said to be controlled to a minor fraction of an inch by a line-locking clutch and sensitive rewind knob.

A machine-formed gripsocket clamped to one end of the line takes pencil, ballpen or metal scriber. Three interchangeable pins act as seating anchors, rewind handles and curvature guides. Price for the "Sidewinder" is $2.75. Laramie Chemical Corp., 290 Main St., Stamford, Conn.

A Lightweight Seismograph For Subsurface Exploration

A 16 lb refraction seismograph is designed for subsurface exploration to depths of 50 ft.

It utilizes the advanced electronic techniques of transistors and printed circuitry to measure the time interval for sound waves to travel to and from bedrock or consolidated material. Sound source (either a hammer blow or explosive) and sound detector are located at the surface.

Known as Model MD-1, the new seismograph is designed to be used for determining depth to bedrock, thickness of different material layers and for classifying subsurface materials without drilling. Geophysical Specialties Co., 4206 Longfellow Ave., Minneapolis 7, Minn.

Reserve Cable Supply Reel Available for Cat Dozers

To provide a reserve supply of cable in operating the Caterpillar Nos. 9A, 9S, 8A, 8S and 8U Bulldozers, a new cable reel has been made available.

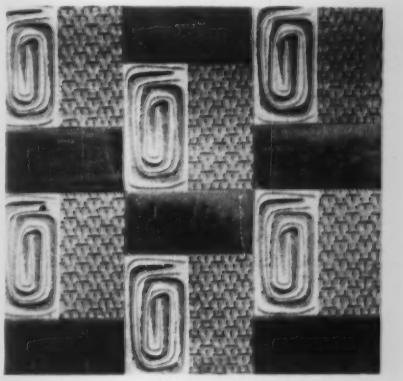
Designed to mount on the side of the radiator guard, the reel provides storage space for 300 ft. of cable. Should breakage occur, the reserve cable may be readily reeved through the cable control sheaves to replace the broken portion. Use of the cable reel, the company claims, eliminates the necessity of discarding the full length of cable required to operate the bulldozer. Caterpillar Tractor Co., Peoria, Ill.

Index Locates Plans in Vertical Filing Cabinet

As many as 2,000 drawings, maps or blueprints on 40 x 60 in. paper can be filed and easily indexed in the new GABS Vertical file, the manufacturer claims.

Drawings and charts are fixed by pegs to a spine index and hung vertically in the cabinet to permit fast inventory and locating. The plans are punched with holes to hang on the filing rails. A file opener is used to remove the wanted sheets from the cabinet.

The manufacturer claims the vertical file prevents curling and fraying of edges and avoids the necessity of rolling up drawings or storing them flat in a drawer where they would be difficult to locate. GFB, Special Filing Systems of America, 51 E. 42 St., New York, N. Y.



Three-Dimensional Tiles Give Walls Design Variety

A series of ceramic tiles with rough or smooth surfaces, glazed or unglazed colors and high relief patterns can be combined or used in single styles to allow a variety of designs for walls in commercial or residential buildings.

Waterproof and weather resistant, the ceramic units can be set in place on wood, stone or masonry with contact adhesives. No maintenance is required since the material and color are permanent.

Tile sizes are 4¼x8½, 12x12, 6x12 and 18x18 in. Wholesale prices range from $3.60 to $6.25 psf for most patterns. Design-Technics, 4 East 52 St., New York, N. Y.

Detachable Grousers Can Increase Loader Production

A removable grouser that bolts onto the street shoes of Case TerraTrac crawler tractor-shovels has been announced.

Available for the new larger capacity 1½ and 2 cu yd models, the grousers are claimed to improve traction when working in mud, sand or on steep slopes. A set of 10 grousers can be attached with an ordinary hand wrench in 10 minutes, according to the manufacturer. A special triangular design is claimed to prevent dirt from packing to assure good traction. Industrial Div., J. I. Case Co., Racine, Wis.

DIGS STRAIGHT

DIGS CLOSE

DIGS FAST

Etowah Construction Company uses its Cleveland 95's compactness and shiftable conveyor to advantage on this utilities job in Franklin, Tennessee.

The Cleveland 95 "Baby Digger"—built by the Pioneers of the Modern Trencher, originators of *every* important trencher design feature—makes money for its owners because it . . .

- ***fits more jobs***—digs to 5½' deep x 24" wide.
- ***digs all soils***—full-size engine, over 30 graduated power and speed combinations.
- ***digs faster***—more bucket capacity, more wheel-and-crawler combinations.
- ***saves property damage***—full crawlers, easy on lawns and sidewalks.
- ***lasts longer***—quality construction and materials mean longer life—it's in the records.

THE CLEVELAND TRENCHER CO.

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

Good Everywhere

Publications

Roof maintenance—A 16 page brochure devoted to solving roof-maintenance problems contains photos, drawings and diagrams explaining how roofs are built, what causes their deterioration and how to repair them. Special attention is given to problems of tar-and-gravel roofs and repair of copings and flashings. Data is based on both laboratory and field experience in diagnosing and treating roof problems. TREMCO MANUFACTURING CO., 8701 KINSMAN ROAD, CLEVELAND, OHIO.

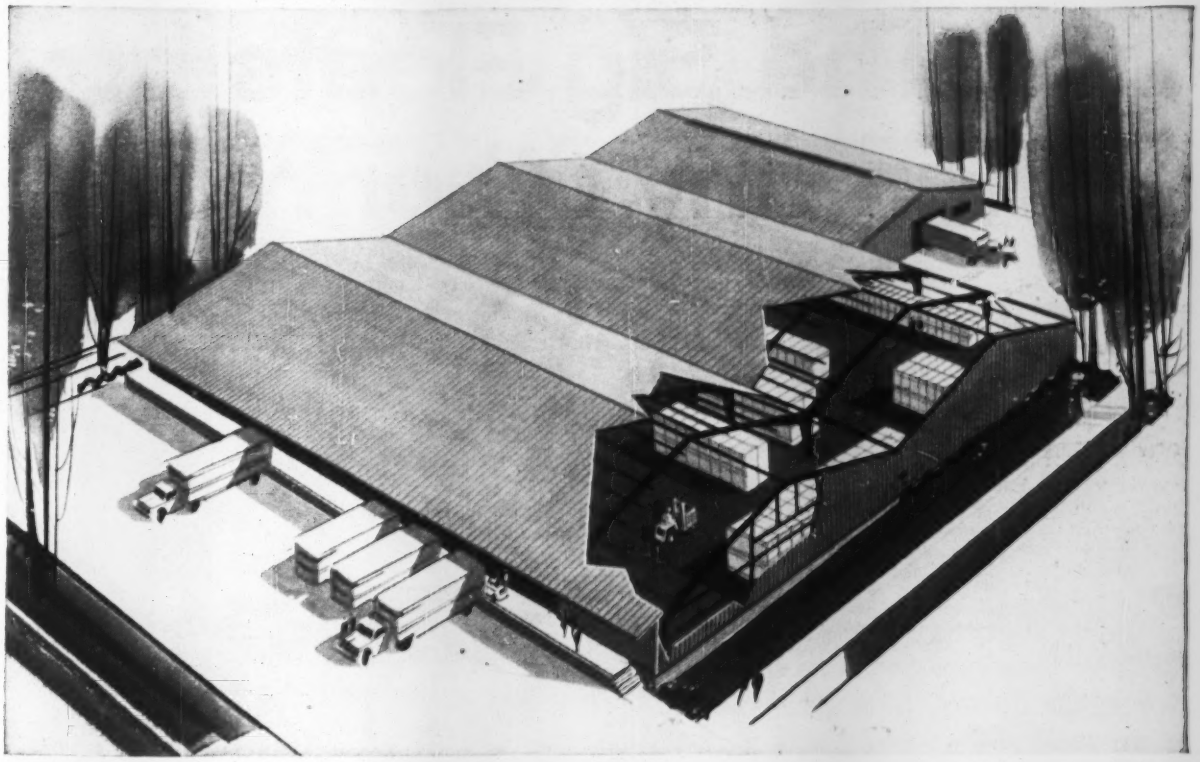
Cranes—New bulletins describing and illustrating the improved line of Clyde Whirleys now are available. These 32 page brochures contain photographs showing the wide variety of work the machines can handle; in addition they give construction details and complete specifications. CLYDE IRON WORKS, INC., DULUTH, MINN.

Trailers—A 4 page pamphlet describing the complete line of low beds, tilt trailers, platforms, dump trailers, dollies, pole trailers and special trailers manufactured by the company is available. TRANSPORT TRAILERS, INC., CEDAR RAPIDS, IOWA.

Water Investments—A 19 page report, "America's Water Needs—Their Investment Significance," published by an investment banking and brokerage firm, discusses the construction programs necessary to meet expanding water needs. In addition to presenting a picture of the current water situation, the booklet discusses water handling and conditioning equipment manufacturers and investment possibilities. DOMINICK AND DOMINICK, 14 WALL ST., NEW YORK, N. Y.

Pavers—Design changes in the Blaw Knox Multifoote concrete paver, said to give faster operation, are completely described in a new supplement to Multifoote Bulletin No. 2616. EQUIPMENT DIV., BLAW-KNOX CO., MATTOON, ILL.

Dump trailers—A catalog illustrates and describes the "Stabilift" Semi Dump Trailer, a frameless type with a legal highway hauling capacity of 20 tons. Designed for hauling dirt, large rock or crushed stone, and sand, it also is easily adapted with batch gates to be used with a concrete paver, carrying seven batches per trip. It also can be used with asphalt paving machines, carrying a 20 ton payload of hot asphalt. COOK BROS. EQUPMENT CO., 3334 SAN FERNANDO ROAD, LOS ANGELES 65, CALIF.



Warehouse Operators get low-cost, rugged, clear-span facilities with NEW STRAN-STEEL BUILDINGS

Sturdy Tapered Frame Design Puts Strength Where Needed

The sturdy, clear-span design of Stran-Steel buildings makes them ideal for efficient materials handling and provides maximum space for storage. In addition, new Stran-Steel buildings have a look of quality never before achieved in an all-steel structure.

Start with the smart *Stran-Satin* finish. *Stran-Satin* metal wall, exclusive with Stran-Steel, provides a strong, durable exterior with the weather resistance of zinc-coated steel. Peaks, gables and eaves are completely enclosed with smart fascia flashing.

Under this attractive exterior is a rugged steel structure. At the peak and knee, the continuously welded rigid frame I-section steel plate beams are securely bolted together. Each frame is also permanently bolted to the foundation.

New Stran-Steel buildings are quickly erected at minimum cost, provide clear, unobstructed space for large equipment, and may be provided with such required accessories as overhead craneways or large access doors. With Stran-Steel buildings, you get the cost-saving features of a pre-engineered structure in a quality building that is fire-safe and easy to insulate. They are available in any length, with widths of 32, 40, 50, 60, 70, and 80 feet, and multiples thereof.

Up to $25,000 is available to finance these buildings through the Stran-Steel Purchase Plan. As little as 25% initial investment; up to 5 years to pay. Ask your Stran-Steel dealer for the complete story. He is listed in your classified telephone directory under Buildings—Steel.

Dept. 27-24

STRAN-STEEL CORPORATION
Detroit 29, Michigan • Division of
NATIONAL STEEL CORPORATION

Atlanta 3, Ga., 206 Volunteer Bldg., **JAckson 4-6611**
Chicago 6, Ill., 205 W. Wacker Dr., **Financial 6-4950**
Cleveland 16, Ohio, 20950 Center Ridge Rd., **EDison 1-3834**
Detroit 29, Mich., Tecumseh Rd., **Vinewood 3-8000**
Houston 5, Texas, 2444 Times Blvd., **JAckson 6-1628**
Kansas City, Mo., 6 East 11th St., **BAltimore 1-8892**
Minneapolis 4, Minn., 708 S. 10th St., **FEderal 9-8875**
New York 17, New York, 405 Lexington Ave., **Murray Hill 6-1400**
San Francisco 3, Calif., 1707 Central Tower Bldg., **DOuglass 2-1200**
Washington 6, D. C., 1025 Connecticut Ave., N.W., **EXecutive 3-4214**

Stran-Steel Corporation, Detroit 29, Michigan, Dept. 27-24

☐ Please send me the Industrial Buildings Catalog.

☐ Please have your representative call.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

The Big Fleets buy than any other make!

New Heavy Duty trucks offer you a choice of four modern Short Stroke V-8 engines—178 to 212 horsepower.

Why?...because on-the-job performance and low operating costs prove FORD trucks cost less!

Take a tip from the men who buy trucks every year. Official truck registration data for the past two years shows that owners of America's biggest commercial truck fleets have bought more Ford trucks than any other make!

Contractors and suppliers engaged in heavy construction work have found Ford trucks are best for their fleets. To begin with, Ford's initial costs are low. Many models are priced below all competitive makes.

FORD TRUCKS COST LESS

more FORD TRUCKS

Ford's Tilt/Cab Models are big in power, in capacity . . . up to 212 hp. Six series provide GVW's from 18,000 lb. to 30,000 lb., GCW's to 60,000 lb.

For example, the new Ford Tilt/Cab models are America's lowest-priced!*

And it costs less to run a Ford truck! Thanks to modern Short Stroke power and sturdy chassis construction, operating costs and "shop time" are reduced. Another important Ford plus is longer truck life—a fact certified by independent insurance experts.

Add it all up—you'll find Ford trucks do cost less! Contact your Ford Dealer . . . let him show you why the big fleets are buying more Ford trucks than any other make.

*Based on comparison of manufacturers' suggested retail prices

Here's what 1957 Ford truck users have to say . . .

Ford T-800 tandem dump owned by Goldring Trucking, construction material haulers, Fort Worth, Texas

"I've used Fords ever since 1935. I like Ford trucks because of the punishment they'll take. In my estimation, Fords are cheaper to operate," reports P. A. "Pete" Goldring, owner.

Ford F-600 dump platform owned by A. Teichert & Son, Inc., general engineering contractors, Sacramento, California

"We've been using Ford trucks for more than 10 years. They have been called on repeatedly for 'out-of-their-class' performance and have stood up very well," says Walter C. Petersen, supt. of equipment.

Ford F-750 dump truck owned by Glassock Brothers, construction material haulers, Litchfield, Ky.

"In comparison with other makes we've used, this Ford is as good a handling truck as you can buy. Our Fords are long-life trucks and they give us real service," says T. W. Glassock, partner.

LESS TO OWN — LESS TO RUN — LAST LONGER, TOO!

Architect: Perry, Shaw, Hepburn & Dean, Boston; *structural engineer:* Maurice A. Reidy, Boston; *builder:* McCloskey & Co., Philadelphia

PHILADELPHIA'S NEW SHERATON HOTEL HAS 16 STORIES OF OPEN-WEB JOISTS

Centrally located in downtown Philadelphia's Penn Center is the magnificent new Sheraton Hotel, opened to the public early in 1957.

The new Sheraton provides 1,000 guest rooms, with one floor, the twenty-first, entirely given over to balconied luxury suites. Parking for guests' automobiles is handled in a 1,000-car garage just across Pennsylvania Boulevard, and connected to the hotel by an underground concourse.

Bethlehem Open-Web Steel Joists were used in the floor construction of the new Sheraton Hotel from the sixth floor to the twenty-first floor, inclusive.

The advantages of using Bethlehem Joists were many. They were delivered to the job site tagged and ready for immediate placing, with no delays to the construction schedule. They required only field welding to secure them permanently in place, forming a rigid, permanent floor structure, which will help to hold future maintenance to a minimum. And used in combination with floor slab and plaster ceiling, Bethlehem Open-Web Steel Joists help provide a fire-resistant building construction.

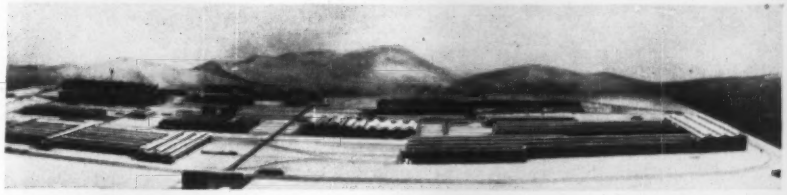
Bethlehem Open-Web Steel Joists, Shortspan Series, conform in all respects to the Steel Joist Institute Standard Specifications for Open-Web Steel Joist Construction and they are fully approved by the Steel Joist Institute. They conform, also, to the Simplified Practice Recommendation R94-53 of the Department of Commerce.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM OPEN-WEB STEEL JOISTS

BETHLEHEM STEEL



Orinoco Steel Mill Gets Started

Site preparations for Venezuela's huge Orinoco integrated iron and steel project is almost completed. Initial operations is planned for the first half of 1958, with full production scheduled for 1960.

The Venezuelan government has recently increased the value of the project from $200 million to 343 million. The increase calls for an expansion of the plant's initial annual ingot capacity from 464,000 to 770,000 tons. At ultimate capacity the plant will produce 1.32 million tons annually.

Completely reliant on local sources of raw material, the mill will use 1.16 million tons of iron ore yearly from the Cerro Bolivar iron ore developments, 428,000 tons of coal, 218,000 tons of limestone and 264,000 tons of scrap iron. Iron will be produced in low shaft electric pig iron smelting furnaces rather than conventional blast furnaces since Venezuelan coal is not of high quality. Power will be supplied by the Caroni River hydroelectric project, now being completed by the government. Installed capacity of the steel plant substations will be 315,000 kva.

Innocenti S.G., Milan, Italy, is the prime contractor for the project. U. S. manufacturers will furnish major portions of the equipment, including four 305-ton open hearth furnaces, soaking pits, a 44 in. blooming mill and other electrical apparatus.

Consultants to the Venezuelan government for overall inspection and control work are Ramseyer & Miller, Inc., New York City.

U. S. Firm Gets Contract For Argentine Road Study

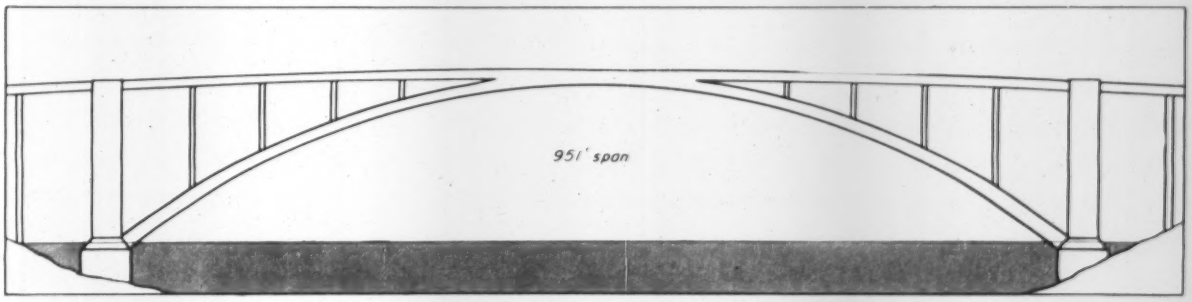
A contract for a preliminary study of a large-scale roadbuilding program in the sub-tropical Argentine province of Corrientes has been signed by authorities of the area with the U. S. firm, Brown & Blauvelt. Cost of the program is estimated at about $33.3 million.

The chief problem is financing. Provincial authorities have asked the national government for a loan, to be repaid in 15 years. The government refused, pointing out that the province is not in a position to borrow such a sum because "its amount exceeds the local financial capacity." The province, however, has announced that it will not abide by this estimate and will look for the money elsewhere.

Motto on Syrian Projects "Check and Double Check"

The Syrian government has become so suspicious of anything Western, according to latest reports, that even the reports of consulting engineers are being double-checked by consultants of other nations.

For this reason, the International Resources, Engineering and Exploration



Longest Concrete Arch Will Span Parana River

Brazil and Paraguay have announced plans to bridge the Parana River between the two countries with the longest reinforced concrete arch span ever built—951 ft. It will cost about $2 million.

Brazil's National Highway Department released engineering details on the structure after the two countries signed the agreement.

The bridge will be located near the mouth of the Iguacu River, whose confluence with the Parana marks a common meeting point of the boundaries of the two countries with that of Argentina. Iguacu Falls, a scenic attraction, will be visible from the structure.

Construction of the crossing will permit completion of a highway link between Asuncion, capital of the landlocked Paraguayan republic, and Paranagua, Brazilian port city on the Atlantic.

Overall, the bridge will be between 1,650 and 2,000 ft long. It will have a 43 ft wide deck about 197 ft above average water level.

The record length of the arch is necessitated by two conditions: (1) the difficulty that the steep basalt cliffs would present in building foundations for a shorter span, and (2) the navigational clearance that is required for river traffic.

Next in length among the world's concrete-arch bridges are an 886 ft span now under construction in Portugal (Douro Porto River) and an 866 ft span that has been built in Sweden (Angermann River).

Two Brazilian contractors, Sotege and Constructora Rabelo S. A., will construct the new bridge. Starting work this fall, probably in September, they expect to complete the project late in 1959.

here's the West's Answer to your Concrete Questions!

* **What parting compound delivers smooth concrete without leaving stains or residue that interfere with painting?**
"Thompson's Water Seal eliminated the problem of stains in our tilt-up concrete walls. Now panels are easily removed from the surface slab and painting proceeds speedily."
ASSOCIATED CONSTRUCTION AND ENGINEERING COMPANY OF CALIFORNIA, San Francisco, Calif.

* **Is there one curing, separating and form-sealing method that easily produces hard, dust-free surfaces?**
"Of all the chemicals we tested in our tilt-up work, Thompson's Water Seal proved the cheapest insurance against costly grief and painting troubles."
BAYCITIES CONSTRUCTION CO., Oakland, Calif.

* **Is it possible to prevent all moisture damage in concrete under pressure or capillary action, regardless of weather?**
"As waterproofing specialists in heavy construction work, we use Thompson's Water Seal on all concrete moisture problems with constant success and at a great saving."
STANLEY H. KOLLER CONSTRUCTION, Crockett, Calif.

THOMPSON'S (deep penetrating) WATER SEAL is now Nationally distributed by
THE PITTSBURGH PLATE GLASS COMPANY
For complete specifications, write for new booklet 7-A-4

Thompson's
MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

E. A. THOMPSON CO., INC. • MERCHANDISE MART • SAN FRANCISCO 3, CALIF.
San Francisco • Los Angeles • San Diego • Portland • Seattle
Dallas • Houston • St. Louis • Denver • St. Paul • Philadelphia

Group of Washington, D. C., (IREX) which has been studying the rehabilitation of the Hijaz Railway between Damascus and Medina, now has seen its report to a government commission submitted to a Japanese firm for checking.

The Japanese firm—Marubeni-Lida—will make a fresh estimate of the costs of rehabilitating the railway.

In another instance, a Danish firm—Kamsax Co.—will help Syrian officials study the report of a Belgian firm that made a survey of another railway project, that of the Lattakia-Kamishlie railway across northern Syria. This railway line will be 500 miles long to connect the agricultural areas of Jesira province in the east to the Mediterranean port of Lattakia, which now is being modernized by a Yugoslavian firm.

Bank Loans $4.8 Million For Tanganyika Port Work

The World Bank has announced a loan of $4.8 million for improvement of transport in the territory of Ruanda-Urundi, a United Nations Trust Territory in central Africa under Belgium administration.

The loan will be used to finance construction of a modern port on Lake Tanganyika at Usumbura—the administrative capital—and a 25 mile paved highway running 4,500 ft from the port up to the central plateau where most of the population and economic activity are concentrated.

The Bank's loan at the port will help to finance construction of two quays built around an interior basin, with breakwaters to protect the entrance from the high waves caused by the prevailing southwesterly winds.

Dutch Complete Tunnel Under North Sea Canal

A new vehicular tunnel under the North Sea Canal—the waterway between Amsterdam and the North Sea—near Velsen, Holland, is now complete except for final details, and the tube is expected to be open for traffic by October. A railway tunnel, being built as a separate facility close to the vehicular tunnel, also is expected to be completed by October.

The vehicular tube has a total length of 5,394 ft. Of this, 2,520 ft. is actual tunnel and the remainder is approaches. The tube carries two, 23 ft. wide railways and has a clearance of 13½ ft.

The railway tunnel, designed for twin track electric equipment, will have a total length of 10,577 ft., of which 6,667 ft. will be under cover. Work on the project was started in 1952.

All aggregate mixes set faster, prove stronger.

FASTER WORK SCHEDULES BRING MORE JOBS

Columbia Calcium Chloride gets concrete in, men off job sites days sooner to make you money

Couldn't bid on a nice, fat job because your crews will still be tied down with *other* concreting? Wish those set and finishing times could be cut, don't you?

In planning now for your cold weather concreting, remember that non-pour time on the site *can* be cut—and very sharply, too. Columbia Calcium Chloride gives you the equivalent of another full crew. This unique chemical agent produces both initial and final set an average of *three times faster* than you get with untreated mixes.

Concrete made with Type I cement and treated with Columbia Calcium Chloride has a three-day strength matching normal seven-day testings. And with Type III (High Early Strength) cement, the treatment produces normal 28-day moist-cured strength in only 3 days!

In addition, Columbia Calcium Chloride promotes much better curing. The normal heat of hydration is released earlier. Moisture loss through evaporation is retarded by 50%.

You'll get more jobs in this year, with Columbia Calcium Chloride working to give your pours greater early strength faster, higher ultimate strength, earlier form removal, speedier finishing. Why not analyze your own batching procedure, or talk to your ready mix supplier about adding Columbia Calcium Chloride? Get helpful information, with no obligation, from the nearest Columbia-Southern district office or from our Pittsburgh address.

Finishing goes faster to save costly overtime and form tie-up.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago
Cleveland • Boston • New York • St. Louis • Minneapolis
New Orleans • Dallas • Houston • Pittsburgh
Philadelphia • San Francisco
IN CANADA: Standard Chemical Limited and its
Commercial Chemicals Division

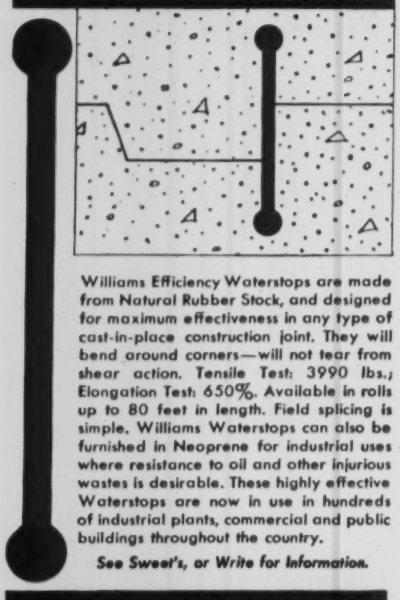
GOT THIS?
(Predraining Problem)

GET THIS!
(Skilled Wellpoint Engineering)

From

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

RUBBER
WATERSTOPS
FOR MASONRY CONSTRUCTION JOINTS



Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

See Sweet's, or Write for Information.

WILLIAMS
EQUIPMENT and SUPPLY CO.
6001 E. McNichols Rd., Detroit 12, Mich.

Men and Jobs

G. H. Dyer—new president

NSPE Top Officers

Eight posts filled for term ending July 1958

Garvin H. Dyer, director of the Missouri Water Company and manager and chief engineer of the Independence Division of the firm, has been elected president of the National Society of Professional Engineers.

A past president of the Missouri Society of Professional Engineers, Mr. Dyer succeeds Robert J. Rhinehart of Pine Bluff, Ark., as president of the national society. Mr. Dyer is also a past president of the Mid-Missouri Section of the American Society of Civil Engineers.

Six regional vice presidents for the NSPE administrative year, which runs to July 1958, were also elected. They are:

A. H. Kidder, head of the testing division of the Philadelphia Electric Company; John B. McGaughy, of Lublin, McGaughy & Associates, architects and consulting engineers in Norfolk; Harry G. Kennedy, executive secretary of Kanawha Coal Operators' Association in W. Va.; W. L. Hindermann, division engineer for the Asphalt Institute in the Midwest area; Clark A. Dunn, executive director of the division of engineering research at the Oklahoma Institute of Technology; and L. R. Durkee, area representative of the Housing and Home Finance Agency in Seattle.

Russell B. Allen, assistant dean of engineering at the University of Maryland, was elected for his tenth term as treasurer of NSPE.

Blucher A. Poole Named New Orsanco Chairman

Blucher A. Poole, director of environmental sanitation of the Indiana State Board of Health, took office as chairman of the Ohio River Valley Water Sanitation Commission July 10.

He succeeds Kenneth M. Lloyd of Youngstown, Ohio, as chairman of the regional pollution-control agency that has united the efforts of eight states in the Ohio Valley in a crusade for clean streams. He has been a commissioner on the interstate agency since its formation in 1948, and for four years served as chairman of its engineering committee.

Following his graduation from Purdue University in 1931, Mr. Poole joined the Indiana State Health Department, where he was appointed chief engineer in 1935. Taking leave in 1942 to serve in the Army, he was eventually assigned to the office of the Chief of Engineers as chief of the water and sewage section. Most recently he acted as expert advisor in sanitary engineering to the U. S. delegation at the 1957 World Health Organization meeting in Geneva.

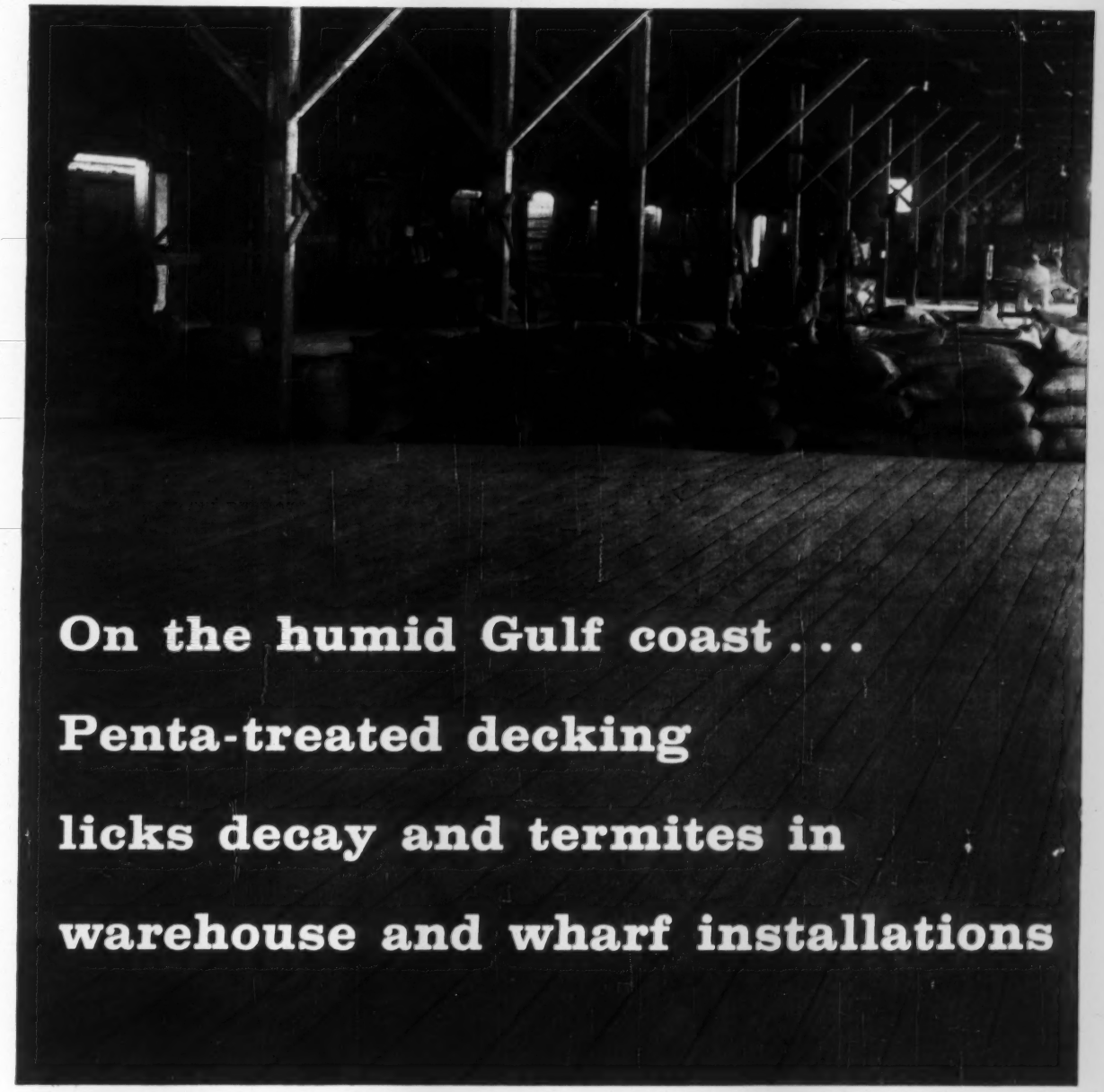
Mr. Poole will preside over Orsanco proceedings during what is expected to be one of its milestone periods. The commission will consider and act upon executive director Edward J. Cleary's unique chloride control system (ENR July 18, p. 30).

B. A. Poole—new chairman

Careers

Government

Col. George E. White, Jr., has been appointed administrative assistant commissioner for the West Virginia State Road Commission. Colonel White, who has a degree in civil engineering from the U. S. Military Academy and a Master of Science degree in civil engineering from Harvard Graduate



On the humid Gulf coast . . . Penta-treated decking licks decay and termites in warehouse and wharf installations

(photo, courtesy of Texas & New Orleans R. R.)

1955—184,012 board feet of clean Penta-treated decking installed in Gretna Wharves, Gretna, Louisiana.

1957—Report: "Penta-treated material gives lasting protection against decay and insect attack. The treatment is clean enough so as not to contaminate bagged goods such as raw sugar . . ."

Here's the severest test any treated wood will have to meet. In the warm, humid Gulf coast area, wood decay and termites thrive in abundance. But termite-proof, rot-resistant Penta-treated wood, that stays sound for 30 years or longer, is meeting this test head on . . . saving many hundreds of dollars in repairs, replacements and the expense of a more costly installation . . . same as it will for you.

Easier, faster handling because it's clean. Oil-borne, *not water soluble*, Penta solution doesn't bleed out of wood to irritate and slow down workmen, stain cargoes or leave wood vulnerable to attack.

Organic Chemicals Division
MONSANTO CHEMICAL COMPANY
Dept. PI-24, St. Louis 1, Missouri

MONSANTO®

Where Creative Chemistry Works Wonders for You

BLOCKS AND FORGINGS SINCE 1889

SKOOKUM BLOCKS FOR ALL TYPES OF CONSTRUCTION JOBS . . .

Bronze-bushed and Timken-bearing blocks with Hadfield manganese or cast steel sheaves, stressproof steel sheave pins, forged alloy steel yokes and draw pins, cast annealed steel sides. Built to 5-to-1 safety factor to assure safe operation.

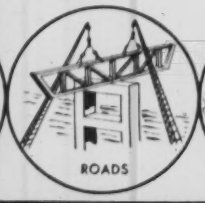
No. 2216T Loading

Hoisting Blocks

No. 264 Hex Head Pin

No. 263 Eyed Pin

Skookum screw pin shackles, Nos. 263 and 264, with hex head or eyed pin, forged from alloy steel, heat treated, machined for true fit. Any size.



SKOOKUM BUILDS ANYTHING IN BLOCKS, FAIRLEADS OR FORGINGS

The SKOOKUM-CO., Inc.
8524 N. CRAWFORD, PORTLAND, OREGON • 647 TERMINAL AVE., VANCOUVER, B. C.
U.S.A. CANADA

Onan ELECTRIC PLANTS

ELECTRIC PLANT NEWS

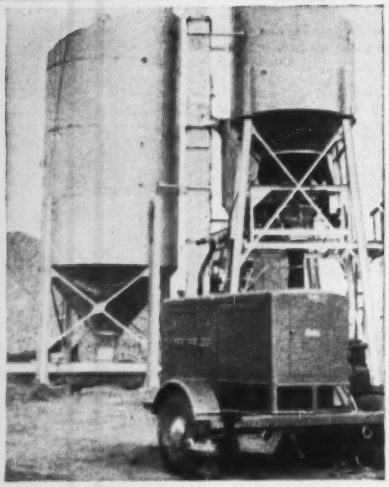
Onan ELECTRIC PLANTS

On-site cement plant operates with Onan power

35KW Onan Electric Plant powers 15 H.P., 5 H.P. and two 2 H.P. motors, vibrator, controls, welder and lights

It's a completely electrified operation . . . even to electric lights in the mobile office nearby . . . yet this bulk cement plant is far distant from the utility highline. The Onan heavy-duty, water-cooled electric plant runs continuously during working hours with a minimum of servicing. It has the capacity to provide electricity for miscellaneous lights, tools, motors and communications, too.

Other A.C. models: 500 to 75,000 watts. Also D.C. and battery charging units.



Series 35ED Onan Plant, powered by 8-cylinder gasoline engine, provides all the electricity needed. Trailer mounted, it is easily moved from site to site. Weatherproof housing.

See your Onan distributor or write for literature

D. W. ONAN & SONS, INC.
3053 University Ave. S.E., Minneapolis 14, Minnesota
ELECTRIC PLANTS • AIR-COOLED ENGINES • KAB KOOLER • GENERATORS

Onan ELECTRIC PLANTS

. . . Men and Jobs

School, served as Air Engineer of the Central Pacific Theater during World War II and filled many other posts with the Corps of Engineers. His last post was as District Engineer in St. Louis.

Alfred B. Kemper, 37, Rapid City, S. D., was appointed state engineer for South Dakota. Formerly an engineer for H. H. Hackett and Sons Contracting Co., Rapid City, he succeeds Dean Loucks, who resigned. Kemper graduated in civil engineering from the School of Mines and Technology at Rapid City.

Harold H. Waddel, of Paramus, N. J., has been appointed to head the Ohio State Highway Department's righ-of-way section. He has been employed by the Transcontinental Gas Pipe Corp., as assistant manager of the land department and had charge of the firm's right-of-way acquisition and settlement of claims in New Jersey, New York, Pennsylvania and Maryland.

Gordon L. Burt is made city engineer for Portland, Ore., replacing **L. G. Apperson,** who retires after 45 years of service.

Paul Kim is appointed Programs Coordination Officer of the Bureau of Reclamation's Region 3 office in Boulder City, Nev., succeeding **Arthur Davis,** who retires from federal service.

Frank B. Turner, Raleigh consulting engineer for the North Carolina State Budget Bureau, has been appointed property officer in charge of the state's Department of Administration's property control division.

H. Wayne Taul of Fresno has been appointed as a member of the state board of registration for civil and professional engineers for a term ending Jan. 15, 1961. He succeeds George L. Sullivan of Santa Clara and is a former professor of engineering at West Point and a retired Army colonel.

Maj. Marlboro R. Dowes begins his duties in Montana early in August as the Fort Peck area engineer, Corps of Engineers.

Francis H. Dryden is named first director of public works for Wicomico, Md. Once an official in the Work Progress Administration, he has been serving as engineer for the Wicomico County Planning and Zoning Commission for the last 18 months.

Baird M. French, formerly division engineer for the Bureau of Public Roads at Phoenix, has taken over as Pacific Northwest regional engineer in Portland, Ore.

Robert L. May, Jr., has resigned as assistant chief counsel of the Oregon State Highway Commission to accept an appointment as assistant general counsel for the U. S. Bureau of Public Roads.

He will head BPR's division of legislation, opinions and general legal services.

Francis V. du Pont, former chairman of the Delaware State Highway Commission, has been appointed to the Maryland Public Service Commission for a 6 year term, replacing **Wilmer F. Davis,** whose term expired. Mr. du Pont was a member of the Highway Commission from 1922 to 1949 and its chairman for 22 years. In 1953, he was named commissioner of the U.S. Bureau of Public Roads by President Eisenhower, a position he resigned to become a consultant to the Secretary of Commerce in connection with enactment of the President's highway program.

Sam Tucker has been appointed city engineer for Phoenix, replacing **R. Gail Baker,** who recently resigned.

Fred J. Hogan has been appointed district engineer of the Pennsylvania Department of Highways at Hollidaysburg.

Retirements

Earl D. Krapf retires Sept. 1 as assistant chief city engineer for Wilmington. He is a past president of the Delaware section of the American Society of Civil Engineers.

Fremont M. Dickins, assistant engineer in the city engineer's office, Utica, N. Y., for 32 years, retired July 15 to take a position with O. W. Hubbell & Sons, Utica general contractors.

Harold J. Neale, Virginia State Highway Department landscape engineer since the position was created in 1930, retired July 1. He will be succeeded by **Raymond L. Nicar,** an associate right-of-way engineer.

Associations

John I. Cahalan, New Castle County, Del., engineer was elected president of the Delaware Council of Engineering Societies.

W. P. Wells of Charlotte was elected president of the Profesisonal Engineers of North Carolina.

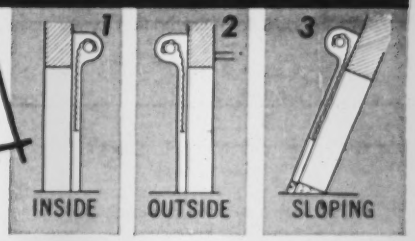
Richard J. O'Hier has been promoted from technical director to secretary-treasurer of the Perlite Institute, New York City.

William Demarest has joined the staff of the Manufacturing Chemists' Association in Washington, D. C., as director, plastics in construction.

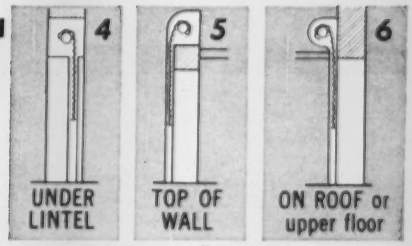
Business

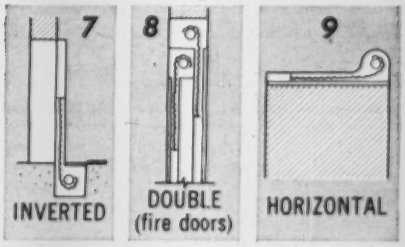
Robert H. Dodds has joined Gibbs & Hill, Inc., New York consulting engineers, as Project Engineer. Formerly Associate Editor of ENGINEERING NEWS-RECORD, for the past two years he has been a development engineer with Lockwood, Kessler & Bartlett.

Quick Guide to Kinnear Door Versatility



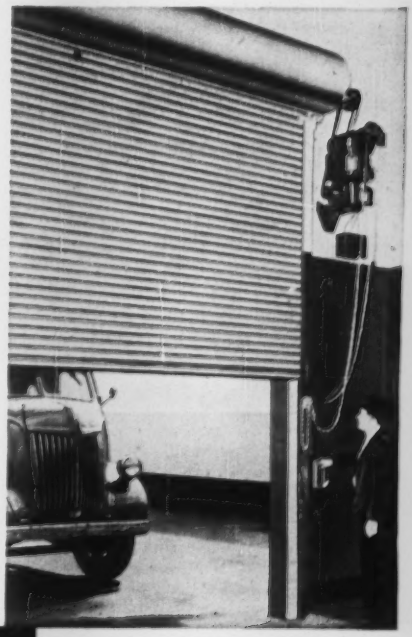
Kinnear Steel Rolling Doors





Whether your door needs are standard or special, Kinnear Rolling Doors offer you more efficiency *more different ways* than any other type of door. For example, the coiling upward action of Kinnear's interlocking steel curtain can be applied:

1. Mounted on inside wall; coils overhead.
2. On outside wall; leaves ceiling clear.
3. Sloping doorway (chutes, hoppers, etc.).
4. Hood under lintel or concealed in wall.
5. Hood above lintel or on top of wall.
6. Hood above roof or upper floor level.
7. Inverted mounting (coil below door sill).
8. Kinnear Rolling Doors (automatic fire type) on both sides of wall for maximum fire protection.
9. Horizontal mounting (openings for observatory, ventilator or similar eqpt.).



In *every* installation, Kinnear Rolling Doors open *out of the way* . . . need no usable space for either storage or operation . . . give extra protection against fire, theft, wind, weather or vandalism. Extra heavy galvanizing assures corrosion-free durability. Built any size. Motor or manual operation. Write for full information!

KINNEAR ROLLING DOORS
Saving Ways in Doorways

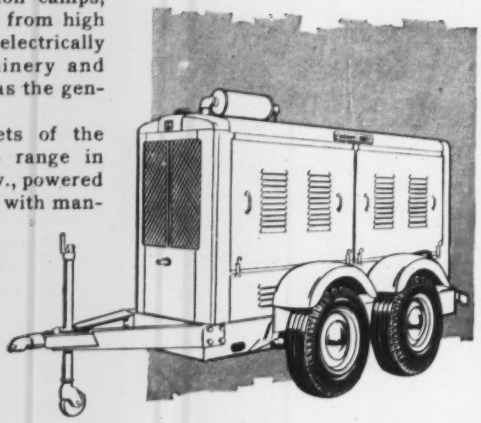
The KINNEAR Mfg. Co.
FACTORIES:
1820-40 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in All Principal Cities

FAIRBANKS-MORSE mobile power plants for outlying construction jobs

When you need plenty of dependable power for lighting construction camps, work trains and jobs remote from high line power . . . for operating electrically powered construction machinery and tools . . . Fairbanks-Morse has the generating sets you want.

F-M power generating sets of the mobile and permanent type range in capacities from 5 kw. to 125 kw., powered by gasoline, diesel or LP-gas, with manual or automatic starting. These units produce AC current in several voltages.

And for jobs where small, portable units are needed, Fairbanks-Morse offers generators ranging in capacity from 400 to 3000 watts, AC.



For complete details, send for the F-M generator catalog section. Write Fairbanks, Morse & Co., Dept. ENR-8-1, Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

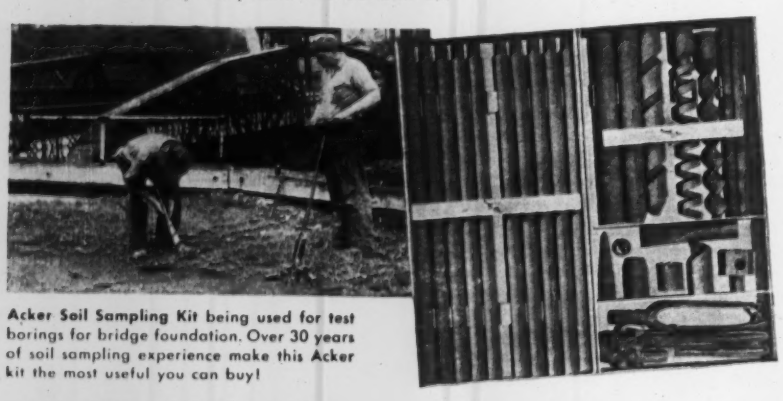
GENERATING SETS • WATER SYSTEMS • MOWERS • MAGNETOS
PUMPS • MOTORS • SCALES • DIESEL LOCOMOTIVES AND ENGINES

DON'T GUESS!

use an ACKER SOIL SAMPLING KIT for accurate sub-surface information

With accurate sub-soil information, you avoid costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

Obituaries

D. W. Robinson, 57, a civil engineer for Joe Rady & Co., consulting engineers in Fort Worth, was killed uJne 12 when his car collided with a truck. He was a graduate of the University of Iowa and was past president of both the Fort Worth Chapter of the American Society of Civil Engineers and the Southwest Section of the American Water Works Association.

Henry E. Smith, 79, a construction engineer for 50 years in Delaware, Pennsylvania, New Jersey, Virginia and New York, died June 23.

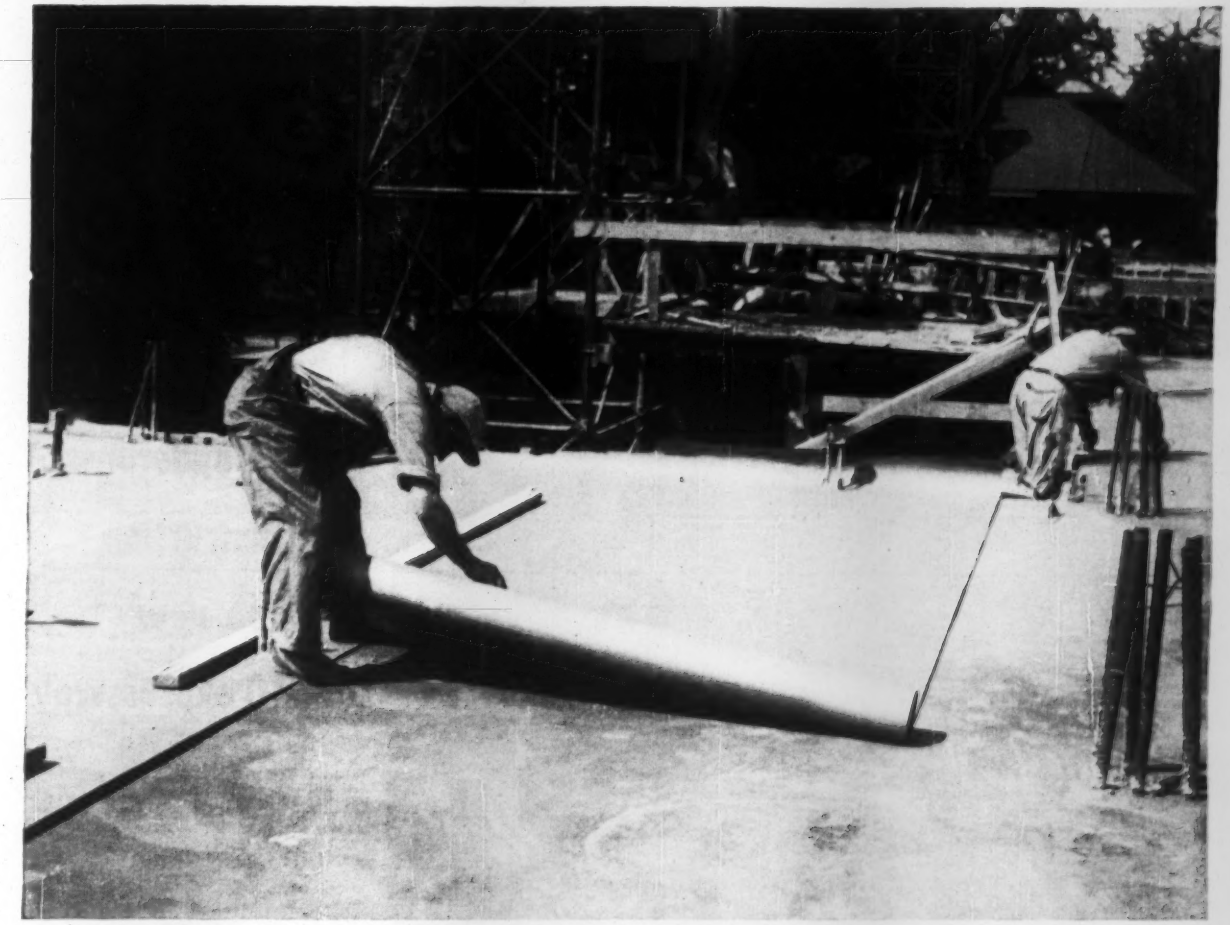
W. Edward Denise, 80, retired construction engineer, died June 26 in Cambridge, Md.

Lt. Col. Earl D. Yarcho, 67, died July 1 at Dallas, Tex. He was with the U. S. Army Engineers in that area at his retirement in 1953.

James H. Sharpe, for 38 years an executive of the Arthur G. McKee & Co. of Cleveland, died June 30 in Lakewood, Ohio. As superintendent of construction for the McKee Co., Mr. Sharpe had supervised the building of steel plants, oil refineries and other heavy industries in this country and abroad. He was a 1918 graduate of the University of Michigan.

William B. Isaacs, 76, a former civil engineer for the Southern Pacific Railroad, died early in June, in San Francisco. He was in charge of the construction of the Tucson & Nogales Railroad—main connecting line of the SPRR for the City of Mexico, from 1909 to 1912. He was also chief engineer of the Petaluma & Santa Rosa Railroad—a SPRR line in California.

Arthur Brown, Jr., 83, architect who served as one of the three chief advisers on design for remodeling of the national Capitol, died in Burlingame, Calif., July 7. Mr. Brown was a graduate of the University of California's College of Civil Engineering and the Ecole des Beaux Arts in Paris. He was associate architect at the Panama Pacific Exposition in San Francisco in 1915, served on the architectural commission for the Chicago Century of Progress in 1933, and was chairman of the architectural commission for the Golden Gate International Exposition in 1939 and 1940. Among the buildings he designed are the Interstate Commerce and Labor Department Buildings in Washington, D. C., and the San Francisco City Hall.



Protective-Curing with Orange Label SISALKRAFT means Better Concrete

Rolled over concrete, Orange Label Sisalkraft assures complete, uniform curing. Original water in the mix is retained — no additional water is needed. Strong, durable, dust-free concrete results . . . at a lower labor and material cost than with any other method.

Tough, waterproof, scuffproof Orange Label Sisalkraft also protects the slab during and after curing — keeps debris and workman traffic from staining or marring the floor.

Write our main offices at Attleboro, Mass. for booklet "Curing and Protection for Better Concrete." No charge, of course.

American SISALKRAFT Corporation

Chicago 6 • New York 17 • San Francisco 5

Other Products in the SISALKRAFT LINE

Sisalkraft Moistop — Permanent vapor barrier

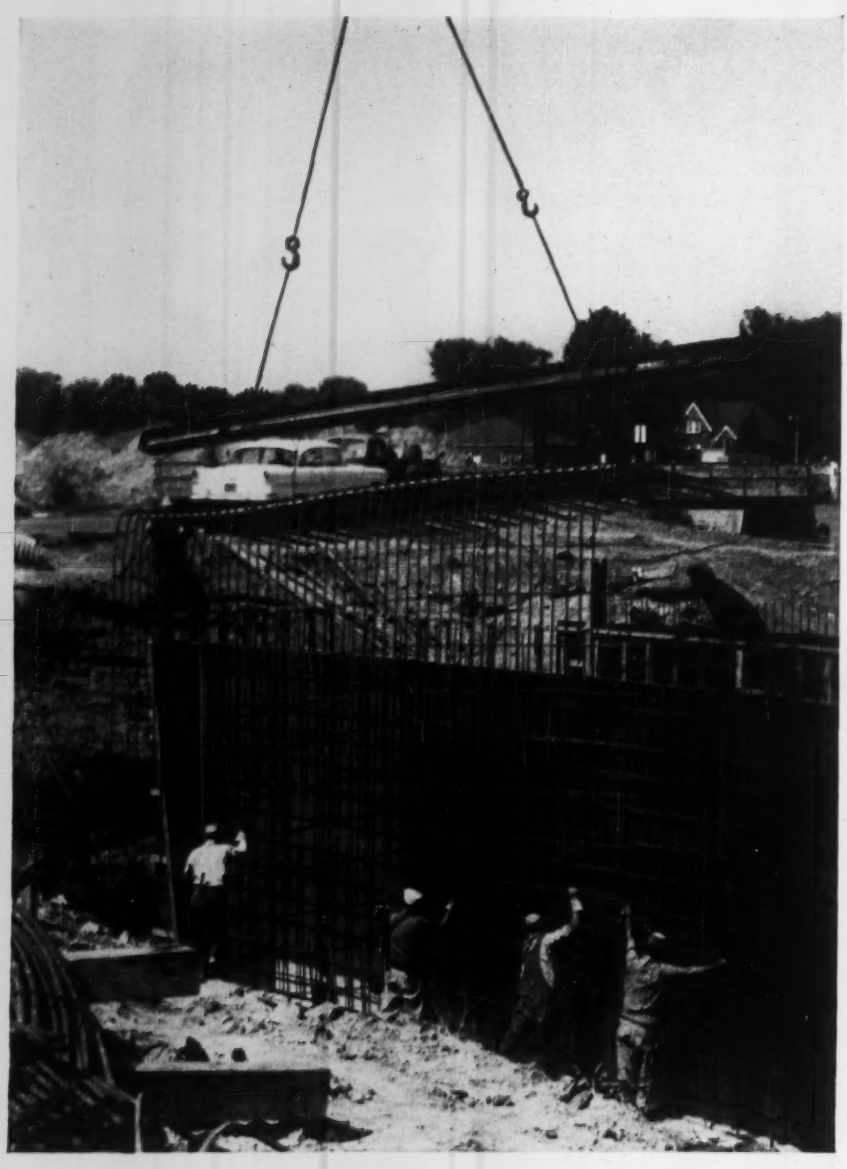
Sisalkraft Vaporstop — Rot resistant vapor barrier

Copper Armored Sisalkraft — Electro sheet copper for concealed flashing and waterproofing

Sisalation — Reflective insulation and vapor barrier

Sisalite — Pure polyethylene film

Sisal-Glaze — New plastic glass replacement



LACLEDE HIGHWAY STEELS

speed underpass construction on new U.S. 40 expressway

Laclede's strong, yet lightweight reinforcing steels speed road construction work because they're easy to handle and place.

Missouri State Highway Department
Fruin-Colnon Contracting Company
St. Louis, Missouri

other Laclede highway steels are . . .

welded dowel spacers • multi-rib round reinforcing bars

center joints • recess joints • tie bars • accessories

LACLEDE®

STEEL CENTENNIAL

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

Unit Prices

Tar Coat and Seal in Vermont

This $45,085 contract to Maurice C. Buck of Colebrook, N. H., is for 0.824 mi of grading, drainage, sub-base and a double tack coat of refined tar and pea stone seal surface coat. Work is in the town of Wallingford for the Vermont State Highway Department.

Thirteen bidders include:

1C	Maurice C. Buck, Colebrook, N. H	$45,085
2	Rogers Brothers, Randolph, Vt	45,758
13	Davis Construction Co., Inc., So. Burlington, Vt.	62,099

Bids: 6-28-57 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$2,500	$2,500
Excavation, common	cy	4,700	0.50	0.80
solid rock	cy	1,700	4.00	4.50
trench, earth	cy	325	2.00	2.50
rock	cy	60	10.00	6.00
channel, unclass	cy	1,090	2.00	4.00
Roadway patrol maintenance	da	8	75.00	60.00
Gravel, sub-base	cy	5,760	1.00	1.00
overhaul	cymi	14,400	0.08	0.08
stripping pits	cy	1,150	0.25	0.20
Dbl tck ct refind tar, pea stsl	gal	8,900	0.55	0.55
Masonry, cement rubble	cy	25	50.00	60.00
RCP, 15"	lf	160	4.50	5.50
18"	lf	76	5.50	6.00
A ct CGMP 18"	lf	290	5.50	5.60
24"	lf	48	7.50	8.00
30"	lf	46	9.50	12.00
Culverts, pipe, relay	lf	100	3.00	2.00
Stone fill, slope protection	cy	1,800	4.00	2.00
Underdrain, modify, perf Act CGM	lf	200	3.00	3.30
Guard rail, 2-cable	lf	1,280	2.25	1.90
anchors	ea	6	60.00	50.00
Guide posts, wood	ea	90	10.00	9.00
Project markers	ea	2	30.00	40.00
Winter rye	lb	300	0.50	0.40
Mulch, modified	t	2	40.00	100.00

Act asphalt coated stsl stone seal

New York Link in the Penn-Canada Expressway

This 4.82 mile, 4 lane divided section of the Penn-Canada Expressway is only 100 miles from the St. Lawrence Seaway construction area where prices may reflect a labor shortage and transportation squeeze. The $3,943,230 joint venture low bid from A. J. Orlando Contracting Co. and Edenwald Contracting Co., Whitestone, N. Y., however, is almost 24% below the engineer's estimate and only 2% under the second bid. Work is for the New York State Department of Public Works. Robert W. Sweet is district engineer at Watertown, N. Y.

Also included are 2.84 miles of access roads, five highway grade separations, I-beam structures of these lengths: 219 ft, 205.5 ft(2), 144.3 ft and 44.3 ft. Four bridges include two I-beam structures, 342 ft each and two 30 ft reinforced concrete twin boxes. Main line paving is 2½ in. asphalt concrete top, 3 in. asphalt concrete bottom on 4 in. broken stone. The foundation is 6 in. foundation course gravel on 6 in. foundation course run-of-bank gravel. Two 24 ft lanes are separated by a mall with minimum width of 40 ft. The job is just west of Watertown.

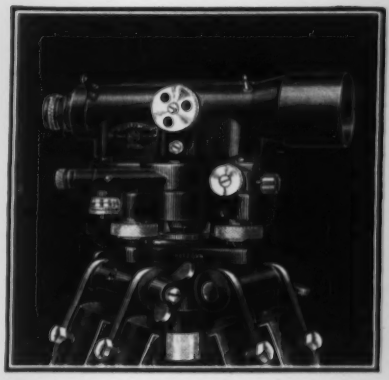
Cl 1A concrete calls for a 1:2:3½ mix, cl 1 concrete for 1:2:4.

Minimum wages range from $2.05 for common labor to $3.625 plus 0.075 welfare supplement for structural and reinforcing ironworkers. Shovel operators under 1½ cy get $3.15 plus 10¢ and over 1½ cy $3.30 plus 10¢. Tractor operator minimum is $2.65 plus 10¢ welfare, truck drivers, $2.05 to $2.30 without welfare supplement.

4C	A. J. Orlando Contg. Co. & Edenwald Contrg. Co., Joint Venture, Whitestone, N. Y.	$3,943,230
2	Bero Construction Corp., Waterloo, N. Y.	4,018,340
5	D. W. Winkelman Co. Inc., Syracuse, N. Y.	4,538,745
EE	N. Y. State Dept. of Pub. Works	5,174,000

Bids: 6-6-57 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$37,500	$37,500
Compactn control bldg	ea	2	1,000	3,500
Furnishing water equip	ls	job	6,000	6,000
Applying water	Mgal	18,500	2.00	2.50
Excavation, uncl	cy	1,124,000	1.00	0.60
Selected borrow	cy	4,300	2.00	1.55
fill	cy	81,000	2.00	1.55
Exc tr culv & br	lf rd	7,340	6.00	5.50
Trim road section	lf rd	80,500	0.70	0.65
Prepare fine grade	sy	188,000	0.20	0.25
Pipe underdr, 6" ϕ	lf	1,030	1.00	1.00
CMP, 12" ϕ	lf	140	4.00	4.85
Paved invert, CMPC, 12" ϕ	lf	92	5.00	5.15
15"	lf	58	6.00	5.65
18"	lf	1,860	7.00	6.25
24"	lf	510	8.00	8.35
30"	lf	210	12.00	14.25
36"	lf	636	14.00	17.15
42"	lf	208	20.00	20.45
54"	lf	632	30.00	26.15
60"	lf	96	40.00	34.25
72"	lf	100	50.00	46.45
RCCP 30" ϕ	lf	420	15.00	14.00
36"	lf	304	20.00	17.50
42"	lf	380	25.00	22.00
Cement, portland tp 2	bbl	8,132	5.00	5.00
tp 2A	bbl	335	5.00	5.00
nat tp N	bbl	1,166	5.00	5.50
Furn & apply cal chloride	t	50	60.00	65.00
Conc struct cl 1A	cy	2,854	60.00	65.00
class 1	cy	2,958	50.00	65.00
Gravel, bagged screened	cy	208	10.00	15.00
Steel bar reinf, structrs	lb	728,000	0.15	0.14
Stud shear connectors	ea	18,720	0.70	0.50
Steel struct	lb	2,772,000	0.167	0.30
Misc. metals	lb	5,000	0.40	0.45
Met prot plate curbs	lf	320	7.00	6.00
Railing cable guide opt	lf	24,750	2.65	2.75
beam type guide opt	lf	620	3.00	3.00
aluminum alloy	lf	3,675	16.00	16.00
Gravel fdn crs-ROB	cy	96,600	2.00	2.15
fdn course	cy	32,600	2.00	2.35
bit treat-LM	cy	13,500	6.00	3.50
Bot crs asph conc tp 1A	t	32,000	9.00	9.50
broken stone	cy	21,000	5.00	7.65
Asphalt concrete opt	t	26,500	9.00	10.00
tp 2B	t	744	9.00	15.00
Bit matl	gal	653	1.00	1.50
A medium curing	gal	1,278	0.17	0.22
A medium curing	gal	188,600	0.17	0.20
A emulsion	gal	39,700	0.17	0.20
Maint & protect traffic	ls	job	12,500	12,500
Conc block paving	sy	3,490	8.00	7.50
Dry rip-rap	cy	490	20.00	15.00
Cofferdams	sf	2,270	7.00	4.50
Piling temp steel sheet	sf	2,000	3.00	4.00
conc cip	lf	3,300	6.00	7.50
furn eq for driv	ls	job	2,500	2,500
Concrete gutters	sy	615	10.00	6.50
CB MH & DI	cy	28	120.00	100.00
Conc ROW mrkrs-tpH high	ea	110	10.00	12.00
Fencing cattle wire	lf	57,100	0.75	0.85
chain link	lf	950	3.50	3.25
Timber & lumber	Mbf	2	200.00	150.00
Pipe, relay	lf	56	3.00	2.50
Gravel, run-of-bank fill	cy	1,480	3.00	3.25
Disposal of bldgs	ea	12	1.00	1.00
Topsoil plac from stkpls	cy	8,500	1.00	1.00
Seeding	ac	78	260.00	300.00
Sodding	sy	10,200	1.50	1.50
Selective thinning	ac	13	500.00	650.00
Floor, open steel	sf	6,985	8.00	9.75
Hydrant latrl & ftgs 6" fl	lf	16	150.00	12.50
Gate vlvs 6," relocate	ea	1	100.00	500.00
Hydrants relocate	ea	1	200.00	150.00
CI wtr pipe & ftgs, 6" fl	lf	600	3.00	8.50
Street monuments re-estab	ea	2	50.00	100.00
Color contrast, stab shldrs	sy	84,700	0.15	0.15
for speed chng lanes	sy	19,350	0.15	0.15
Protec cov, metal surfaces	sf	25,430	0.50	0.50
Railroad protection	ls	job	2,000	2,500

Completion Schedule: July 1, 1959 cip cast in place fl furnish & install



PROVEN IN THE FIELD . . . WHERE PERFORMANCE COUNTS

Watts Microptic Engineers' Levels are tops with foremost construction engineers throughout the country. Here is precision performance, time-saving performance, dependable performance in all climates and terrain. For full information on the complete line of Watts Microptic Engineers' Levels see your nearby Dietzgen Dealer. Made by Hilger & Watts, Ltd., London, sold and serviced in the United States by the Eugene Dietzgen Co.

EUGENE DIETZGEN CO.

Chicago • New York • San Francisco • New Orleans
Los Angeles • Pittsburgh • Washington • Philadelphia
Milwaukee • Seattle • Denver • Kansas City • Cincinnati
Dealers in All Principal Cities

DIETZGEN

ELGOOD HYDRAULIC & MECHANICAL **JACKS** to 600 ton capacity

RENTALS - SALES

PIPE PUSHING - ERECTION - PILE DRIVING

PILE TESTING - PRESTRESSED CONCRETE

SPECIAL APPLICATIONS

ELGOOD EQUIPMENT CORP.

373 TEN EYCK ST., BROOKLYN, N. Y., HY 7-5445

GUNITE dense—durable—high strength

PNEUMATICALLY PLACED CONCRETE

for — Swimming Pools
Fireproofing Structural Steel
Lining Steel Stacks & Bunkers
Repairing Docks, Dams & Bridges
Reservoirs
Water Main Lining
Sewer Repairs
Pile Protection
Stucco Coatings
Insulating Concretes
Thin Walls
Lining Rock Tunnels
Prestressed Tanks
Pressure Grouting

We are Gunite contractors and engineers of long, extensive experience covering many hundreds of jobs. Get in touch with us for complete engineering data and estimates on your problem.

GUNITE CONSTRUCTION CORPORATION
38-75 13th Street, Long Island City 1, N. Y.
STillwell 4-8124

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last, July 4; Next, Aug. 8
- Iron and steel Products, Pipe: Last, July 11; Next, Aug. 15
- Wood Products, Glass, Explosives, Chemicals: Last, July 18; Next, Aug. 22
- Clay Products, Lime, Plaster, Paint, Roofing: Last July 25, Next, Aug. 29

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	¾" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION† loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq. ft
Atlanta	$70.00	$80.00	$43.50	$70.00	$70.00	$127.00	$70.00	$1.00	$60.00	$2.00b	$75.00	....	
Baltimore	51.25f	44.75f	32.55f	55.00f	65.00f	108.50f	69.00f	1.30	66.50	1.60	45.00	$4.00g	$33.50
Birmingham	73.00	60.00	47.77	75.00	82.00	136.50	81.00	1.40	70.00	1.80	75.00	3.13g	....
Boston	60.00m	50.00m	36.00m	60.00m	65.00m	120.00m	79.00kn	1.45	75.00	....	60.00	6.00	55.50
Chicago	67.00	52.00	43.00	62.00	85.00	123.00	85.00	1.85	80.00k	....	63/65l	5.25g	....
Cincinnati	47.40w	42.35w	31.55w	50.55w	70.00s	125.00s	72.50w	1.25	60.00	1.25	73.50	3.12j	50.00
Cleveland	60.50	55.00	40.00	65.00	74.00	130.00	80.00	1.35/1.50	75.00	1.60*	60.75*	17.50o	50/55
Dallas	58.00	55.00	42.50	65.00	73.50	122.50	70.00	1.92	66.00	1.37	66.10	4.30g	.....
Denver	62.00	54.50	41.00	62.00	75.90	126.00	74.90	....	71.00t	1.28s	65.00	11.00r	21.00
Detroit	59.00	49.50	36.00	61.00	59.50	90.00	59.00	....	.....	1.95b	83.00	....	.....
Kansas City	65.00	55.00	40.00	....	72.00	115.00	75.00	1.40	75.00	2.00	75.00	4.10d	44.10t
Los Angeles	64.00	50.00	0.325z	66.50	71.87	121.25	80.00	....	83.00	1.35s	64.00	4.57g	.....
Minneapolis	75.00	65.00	0.40z	80.00	78.00	140.00	78.00	2.00	80.00	1.80	80.00	5.50	.....
Montreal	56.00	47.40	36/39	53.00	63.25	.....	63.00	1.50	66.00	1.50	66.00	9.00q	56.00
New Orleans	57.00	48.00	45.00	60.00	75.00	125.00	72.50	1.75	65.00*	....	.....	.....	.....
New York	53.00	45.50	35.00	54.00	71.50	117.00	72.50	1.55b	68.50	1.55b	68.50	4.05i	52.50cc
Philadelphia	50.55	48.53	34.40	49.54	68.73	105.110	55/65	....	60/70	....	70/75	5.60/6.34	40.50
Pittsburgh	57.00	47.53	35.00	....	60.00	100.00	55.00	1.05x	55.00	1.05x	55.00	2.45i	38.50
St. Louis	65.00	55.00	39.00	70.00	75.00	120.00	80.00	1.35	85.00	1.65	66.00	5.85i	....
San Francisco	54.00	46.00	0.35x	57.00	67.50	108.00	66.50	1.60	66.50	1.60	66.50	4.95	55.00
Seattle	66.00	57.50	49.45	65.00	74.50	125.00	73.50	1.60y	74.00	1.60*z	80.00*f	4.25	46.50
Toronto	61.00	50.00	38.00	64.50	75.00	.....	....	1.40	60.00	....	60.00	16.00e	45.45

*a fob warehouse. *b for hand packing. *c 30# bag. *d 2-side foil. *e 40# kraft paper, 5 Msf, 100/500 rolls. *f 20# sq ft bag, 4" thick. *g full trailer loads. *h 80# kraft paper backing. *i LCL. *j 40#. *k 7". *l 2". *m 10 ton quantities. *n distributor's siding. *o per Msf roll. *p per sf. *q 500 sf. *r per cwt. *s 35# bag. *t Insufoil. *w fob city. *x sq yd. *y 26# bag. *z 32# bag *cc 12" to 24" width.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const
Atlanta	$3.45	$2.90	$3.15+7½¢d	$3.225	$3.125	$3.20	$3.30+25¢d	$1.55	$1.55
Baltimore	3.70+10¢d	3.05+7½¢d	3.65+7½¢d	3.55/3.70+10¢Q	3.35+7½¢d	3.425	3.30+7½¢d	1.90+7½¢d	1.90+7½¢d
Birmingham	3.50	2.70	3.20+7½¢	2.52	2.92	3.30	3.25+10¢i	1.50	1.60
Boston	3.65+15¢d	3.25+10¢d	3.70+20¢n	3.65+10¢d	3.65+20¢f	3.30+13¢R	3.29+10¢d	2.45+7¢d	2.35+7¢d
Chicago	3.82+7½¢	3.45+20¢m	3.80+15¢i	3.40+5¢c	3.70+23¢c	3.65+22¢c	3.55+22¢c	2.77½+7½¢	2.77½+7½¢
Cincinnati	3.75	3.45	3.50+7½¢d	3.225/3.475	3.50	3.67+4¢N	3.65+9½¢c	2.50	2.40
Cleveland	3.715+10¢i	3.74	3.64+10¢i	3.74	3.74	3.765	3.64+10¢d	3.00	2.915
Dallas	3.775	3.00	3.125+7½¢i	3.125	3.50+7½¢i	3.25+7½¢i	3.20+7½¢i	1.62½	1.62½
Denver	3.75	3.20	3.125+7½¢d	2.95	3.375+12½¢hh	3.40f	3.35+15¢O	2.10	2.10
Detroit	3.53+38¢ff	3.25+40¢e	3.60+22½¢P	3.20+20¢k	3.58+34¢cf	3.65+25½¢ff	3.45+14¢R	2.58+15¢e	2.58+15¢e
Kansas City	3.75	3.125	3.20	3.22	3.50	3.325O	3.40+7½¢i	2.255	2.305
Los Angeles	3.80+10¢hh	3.22½+10¢d	3.40+10¢i	3.19+10¢d	3.75+12½¢R	3.90f	3.55+10¢d	2.50+7½¢i	2.50+7½¢i
Minneapolis	3.575	3.15	3.32	3.10	3.25+23¢ff	3.25+36¢n	3.215+20¢e	2.40	2.40
New Orleans	3.325+5¢i	2.80	3.20+7½¢i	2.925+7½¢i	3.00+5¢c	3.275+7½¢i	3.15+15¢i	1.60	1.60
New York	4.25+37¢ttv	3.90+31¢hhJ	4.30+26¢n	4.00+32¢cc	4.00+50¢k	3.65+40¢eP	3.95+35½¢hhL	2.80+22¢lY	2.80+22¢lY
Philadelphia	3.75+17¢c	3.525	3.80+18¢M	3.15½/3.90½+10¢c	3.65+15¢c	3.77+15¢e	4.00+19¢e	2.25	2.55
Pittsburgh	3.75+17½¢m	3.525+7½¢i	3.80+10¢d	3.42+10¢d	3.575+17½¢m	4.00+28¢d	3.775+17½¢m	2.325+17½¢m	2.20+15¢cf
St. Louis	3.75+2h3¢c	3.35+10¢c	3.37+7½¢i	3.45i	3.675+7½¢i	3.60+26¢c	3.70+20¢c	2.40+10¢i	2.40+10¢i
San Francisco	3.75+30½¢d	3.305+30¢f	3.40+10¢i	3.205+10¢i	3.61+20¢m	3.525+26¢ff	3.70+46¢R	2.505+10¢i	2.505+10¢i
Seattle	3.75+10¢d	2.94+10¢d	3.25+10¢d	3.13+20¢e	3.40+10¢d	3.40+21½¢k	3.40+23¢P	2.51+10¢d	2.51+10¢d
Montreal	2.20+10¢t	2.00+10¢t	2.15+10¢t	1.90+15¢t	2.22+10¢t	2.20+18¢t	2.22+18¢t	1.40+10¢t	1.40+10¢t
Toronto	2.71+10¢t	2.50+10¢t	2.50+10¢t	2.60+10¢t	2.60+20¢cf	2.80+11¢f	2.49+16¢ff	1.55+6¢t	1.55+6¢t

ENR Skilled Average (Bricklayers, Carpenters, Ironworkers): $3.568 ENR Common Average $2.328.

*Cost of living bonus incl. in base pay. †FB *a 6 hr. day. *b 7 hr. day. *c 5% vac. stamp fund plus 10¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. *d H&WF. *e 10¢ H&W, 10¢ VF. *f 10¢ WF, 20¢ PF. *g 7½¢ H&W, 2¢ Ed.F. *h $2.85 homes & housing plus 7½¢ WF. *i WF. *j Inc. 4% VF; 1% PF pd by employer. *k 10¢ WF, 5¢ VP, 5¢ HP. *l 4% VF. *m 7½¢ WF, 10¢ PF. *n 7% V&Hol., 3% H&W, 1% PF. *o 10¢ WF, 10¢ PF. *p 3% WF, 3% PF. *q 10¢ WF, 6% V&H, 3% PF. *r 4% WF, 20¢ PF. *s 5% W&PF, 4% VF, 1% NC, 6 PH. *t Inc. 7½¢ WF. *u 10¢ WF, 1½% PF. *w 10¢ WF, 10¢ VF. *y 10¢ H&W, 10¢ PF. *z 10¢ WF, 5¢ HP. *A 15¢ WF, 15¢ PF, 20¢ BF. *B 7½¢ VP, 5¢ PF, 1½¢ Ed.F. *D 10¢ H&WF, 5¢ indus. prom. *E 6% WF, plus travel pay per day. *F Plus $4 per day annuity contrib. *G 10¢ WF, 10¢ VF, 3¢ prom. *H 10¢ WF, 10¢ VP, 3% PF, 2% PH. *I 15¢ H&WF, 5¢ advtg. *J 5% WF, 6 PH, 3% PF. *K 25¢ W&PF, 15¢ VF, plus 8¢ misc. *L 3% WF, 3% PF, 2% VF, 1% Ed. F. *M 10½¢ WF, 7½¢ PF. *N 1½% PF. *O 10¢ WF, 1% NECA. *P 10¢ Hlns., 7½¢ PF, 5¢ VF. *Q 2 drums; 1 drum $2.85/$3.00 + 10¢ WF. *R 10¢ H&WF, 2¢ admin, 1¢ apprent. *T H&W, VF. *U 10¢ WF, 13¢ VF, 3¢ PF. *V 5% WF, 3% PF. *X 7½¢ WF, 14¢ VF. *aa 7¢ WF, 15¢ PF. *bb 8¢ WF, 2¢ advg. *dd 12½¢ WF, 14¢ PF, 5¢ Jt Bd, 5¢ prom. *ff 10¢ H&W, 5¢ PF. *gg 10¢ Ins. *hh 7½¢ H&WF, 5¢ indus. prom. *ii 4½% WF, 4% PF, 6 P H

	Truck drivers 1½ T	—4 cy	+4 cy	Tractor Operators Incl. bulldozers 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.75	$1.80	$2.05	$2.525	$2.525	$2.525	$2.525	$3.225	$3.225	$2.70	$2.475	$1.77
Baltimore	1.60+7½¢	1.75+7½¢	1.85+7½¢	3.15/3.30b	3.15/3.30b	3.40/3.55b	3.40/3.55b	3.55/3.70+10¢e	3.55/3.70+10¢e	3.15/3.30b	2.85/3.05b	2.40
Birmingham	1.60	1.79ff	2.05ee	2.66	2.66	2.66	2.80	2.80	2.80	2.76	2.385	1.75
Boston	2.395c	2.45	2.65	3.275+10¢ad	3.275+10¢ad	3.275+10¢ad	3.275+10¢ad	3.65+10¢e	3.65+10¢e	3.275+10¢e	3.20+10¢e	2.60+7¢e
Chicago	2.16+12¢fe			3.15+5¢e	3.30+5¢e	3.20+5¢e	3.00+5¢e	3.75+5¢e	3.75+5¢e	3.25+5¢e	3.10+5¢e	
Cincinnati	2.33cc	2.43cc	2.53cc	3.225	3.225	3.225	3.225	3.475	3.475	3.475	3.475	3.475
Cleveland	2.625+10¢e	2.625+10¢e	2.625+10¢e	3.49	3.49	3.49	3.49	3.74	3.74	3.49	3.365	3.365
Dallas	1.625	1.625	1.625/2.625i	1.625/2.625i	1.625/2.625i	1.625/2.625i	1.625/2.625i	1.625/2.625i	1.625/2.625i	1.625/2.625i	1.625/2.00i	1.775/2.00i
Denver	2.20	2.30	2.45	2.20	2.80	2.80	2.80	2.95	2.95	2.80	2.80	2.40
Detroit	2.45	2.45	2.45	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.225+10¢e	2.71+25¢mm
Kansas City	2.23n	2.23n	2.305n	2.425	2.925n	2.975n	2.975n	3.22	3.22	2.835	2.975i	2.35
Los Angeles	2.63+7½¢	2.63+7½¢	2.83+7½¢	3.47+10¢e	3.47+10¢e	3.47+10¢e	3.56+10¢e	3.56+10¢e	3.56+10¢e	3.56+10¢e	2.74+10¢e	2.71+7½¢e
Minneapolis	2.40	2.40e	2.55i	2.78	3.00e		3.00	3.22e	3.48e	2.78	2.67	2.53
New Orleans	1.75	2.00	2.00	2.275+7½¢e	2.925+7½¢e	2.925+7½¢e	2.925+7½¢e	2.925+7½¢e	2.925+7½¢e	2.925+7½¢e	2.275+7½¢e	1.70
New York	2.21hh	2.75+14¢hh	2.75+14¢hh	3.375+27¢k	3.375+27¢k	3.375+27¢k	3.50+28¢k	4.25+34¢k	4.25+34¢k	3.50+28¢k	3.50+28¢kl	3.10+15½¢ee
Philadelphia		1.925/2.15+7½¢e			3.15½/3.90½+10¢e		3.15½+3.90½ +10¢e		3.15½+3.90½+10¢e	3.15½+3.90½ +10¢e	2.97½+10¢e	2.13½+10¢e
Pittsburgh	2.27+15¢m	2.40+15¢m	2.50+15¢m	3.23+10¢e	3.23+10¢e	3.23+10¢e	3.23+10¢e	3.42+10¢e	3.42+10¢e	3.42+10¢e	2.96+10¢e	2.25+10¢e
St. Louis	2.50+7½¢e	2.60+7½¢e	2.60+7½¢e	3.45kk	3.45kk	3.45kk	3.45kk	3.45kk	3.45kk	3.45kk	2.90kk	2.90kk
San Francisco	2.55+10¢e	2.55+10¢e	2.69+10¢e	3.32+10¢e	3.32+10¢e	3.32+10¢e	3.32+10¢e	3.65+10¢e	3.65+10¢e	3.48+10¢e	2.93+10¢e	2.65+10¢e
Seattle	2.80+7½¢ee	2.80+7½¢ee	3.00+7½¢ee	3.10+20¢ff	3.10+20¢ff	3.10+20¢ff	3.10+20¢ff	3.46+20¢ff	3.46+20¢ff	3.19+20¢ff	2.85+20¢ff	2.71+10¢e
Montreal	1.40+11¢ff	1.40+11¢ff	1.40+11¢ff	1.60+15¢ff	1.83+15¢ff	1.83+15¢ff	1.83+15¢ff	2.09+16¢ff	2.09+16¢ff	1.83+15¢ff	1.70+15¢ff	1.70+15¢ff
Toronto	1.60+6¢ee	1.60+6¢ee	1.60+6¢ee	2.00+8¢ee	2.10+8¢ee	2.10+8¢ee	2.10+8¢ee	2.60+10¢ee	2.60+10¢ee		2.15+9¢ee	1.75+9¢ee

*a H&WF. *b lower rates, straight time, other broken. *c 2-axle. *d intermediate. *e bldg contr; highway $2.45 + 7¢ WF. *f less than 2-T. *g up 6 cy. *h 4% WF, 4% PF. *i 6-8 cy. *j plus $2 pd by employer for hosp. death benefits to family. *k bldg constr; steel contr $3.475. *l higher rates are union, other taken from min. wage approved by County Comm. Court. *m 10¢ H&W, 5¢ PF. *n flatbed. *o under 10 cy. *p over 10 cy. *q over 50 hp. *r blade grader. *s WF. *t single. *y to 3½ cy. *z 3½ cy & over. *aa plus W&PF. *bb 3% WF, 2% PF, 11 PH. *dd up to 5 cy. *ee 5 cy & over. *ff 1½ to 3T. *gg up to 5 T. *ii 4% VF. *kk Incl. 7½¢ WF. *ll FB. *mm 10¢ H&WF, 10¢ ins. 5¢ VP. *oo Plus $2.25 wk. WF. *ss 5% WF, 6 PH. *tt 10¢ H&WF, 10¢ PF.

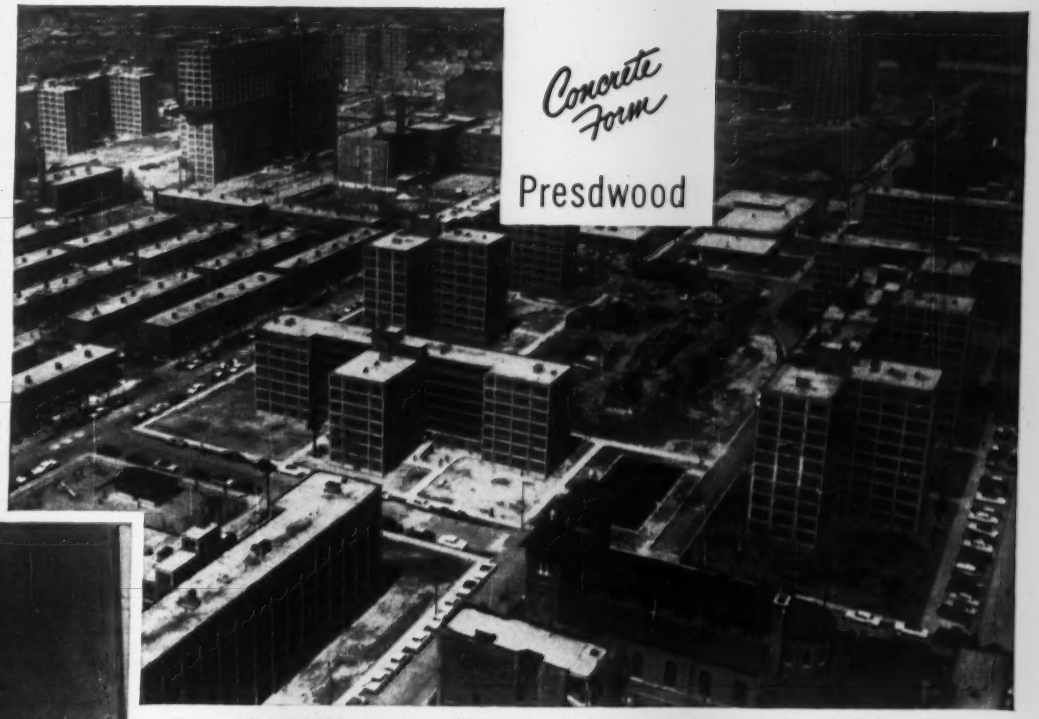
MEXICO CITY PRICES

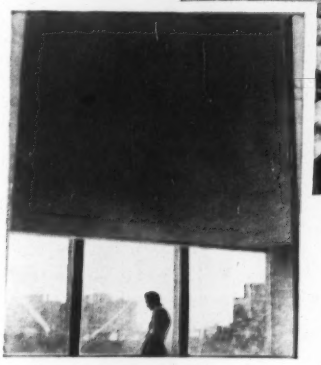
n Pesos, F.o.b. City	June '57	July '57
Common Wages—Building (8 hr. day) (Peons) ..... av. per hr.	1.38	1.38
Common Wages—Heavy Const. (8 hr. day) (Peons) .. av. per hr.	1.38	1.38
Skilled Labor Wages		
Carpenters (8 hr. day) 1 cl .. av. per hr.	2.48	2.48
Bricklayers (8 hr. day) 1 cl. av. per hr.	2.48	2.48
Struct. Iron Workers (8 hr. day) .....Remachadores. av. per hr.	3.77	3.77

Struct. Steel, Shapet	June '57	July '57
3"-15" x 12 meters.....per metric ton	2100.00#	2100.00#
# fob Monterrey		
Reinf. Steel, Corr. Rods		
¼" x 11 meters..... per ton	2000.00	2000.00
⅜" x 11 meters..... per ton	2000.00	2000.00
½" x 11 meters..... per ton	2000.00	2000.00
⅝" x 11 meters..... per ton	2000.00	2000.00
¾" x 11 meters..... per ton	2000.00	2000.00
1" x 11 meters..... per ton	2000.00	2000.00

Gravel truck load at 3½ cu. meters	June '57	July '57
Blue Gravel..... per tr. load	75.00	75.00
Rose Gravel..... per tr. load	73.00	73.00
Cement, Std. Port. (Toltecs). per tan	240.00	240.00
Lumber		
1" Pine..... per M ft.	1400.00	1400.00
1½" Pine..... per M ft.	1650.00	1650.00

MASONITE





Frances Cabrini Homes project, Chicago (second stage). Architect: A. Epstein & Sons, Inc. General Contractor: Sumner Sollitt Co. Floor Slabs by: Adjustable Forms, Inc., Minneapolis, Minn. Photo: Chicago Sun-Times.

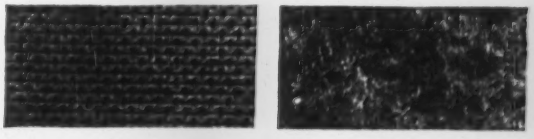
Smooth ceilings for 1,921 apartments

Yesterday, a congested slum area. Next spring, 49½ acres of homes, gardens and playgrounds.

In the 26-million-dollar extension of the Frances Cabrini Homes project, Chicago, Ill., more than 1,300,000 sq. ft. of exposed concrete ceiling surface was formed by Masonite® Concrete Form Presdwood®.

Doing the big jobs, like this one, comes naturally for these tough, dense panels. Without knots or grain, they create smooth, texture-free surfaces that need a minimum of finishing. And they can be used again and again, saving you material and forming costs.

These large, ¼" thick panels are easy to cut and fit with carpenters' tools. They can be bent for arches and columns. Send the coupon for more information and a free sample.



There are two sides to this story:

Screen side to concrete. Cuts hand-rubbing time. Provides ideal bond for painting concrete surfaces.

Smooth side to concrete. For blemish-free concrete surfaces. Hand rubbing is virtually eliminated.

® Masonite Corporation—manufacturers of quality panel products

MASONITE CORPORATION
Dept. ENR-8-1, Box 777, Chicago 90, Ill.
Please send me a free sample of Concrete Form Presdwood and your illustrated booklet.

Name.....
Firm.....
Address.....
City..... *State*.....
Zone..... *County*.....

USS "T-1" Steel reduces weight of lift truck carriage assembly by 66%

INCREASES PAY LOAD PROPORTIONATELY

THE YARDLIFT 350®, manufactured by Ross Carrier Division of Clark Equipment Company, is designed to handle heavy materials on uneven ground. It has a lifting capacity of 35,000 pounds. Many vital strength members of the lifting mechanism are fabricated of USS "T-1" Steel. The reason is elementary: in fork-truck design every extra pound of mechanism forward of the front wheels reduces the machine's load capacity.

According to Clark design computations, the YARDLIFT 350's carriage assembly, if made of structural carbon steel, would have weighed nearly 3 times as much as the "T-1" Steel assembly to obtain the same capacity. And it would have been 3 times bulkier. USS "T-1" Steel, in other words, permitted maximum load capacity at *one-third* the weight and size . . . and increased payload substantially.

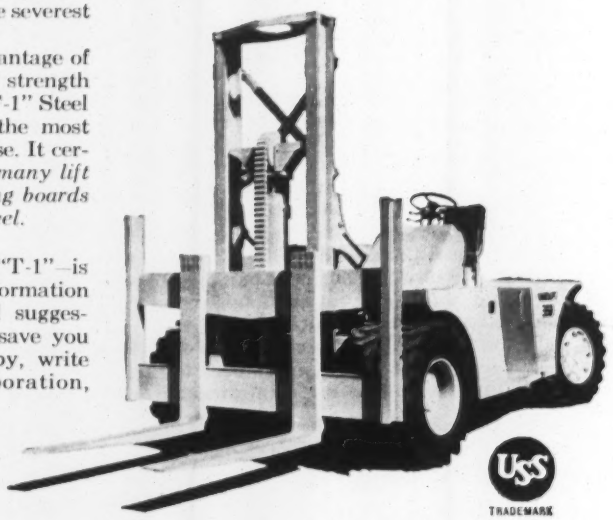
The secret is USS "T-1" Steel's 90,000 psi yield point, nearly 3 times that of structural carbon steel. It is this strength that helped make the YARDLIFT 350 possible. And USS "T-1" Steel's high impact resistance and toughness, even at sub-zero temperatures, enable the YARDLIFT 350 to withstand the jolts and jars of rough yard work even in the severest winter weather.

Why don't you take advantage of the unique combination of strength and toughness that USS "T-1" Steel has to offer? It may be the most economical steel you can use. It certainly is at Clark because *many lift trucks now on their drawing boards incorporate USS "T-1" Steel.*

• • •

Our new catalog—USS "T-1"—is complete with technical information and offers many practical suggestions for its use that can save you money. For your free copy, write United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

The use of USS "T-1" Steel in the Clark YARDLIFT 350 carriage resulted in vital savings in both weight and space—kept dimensions to a minimum while maintaining lifting capacity of 35,000 pounds.



USS
TRADEMARK

United States Steel Corporation, Pittsburgh • Columbia-Geneva Steel Division, San Francisco • Tennessee Coal & Iron Division, Fairfield, Ala.
United States Steel Supply Division, Warehouse Distributors, Coast-to-Coast • United States Steel Export Company, New York

Remember that we also make USS COR-TEN, USS TRI-TEN and USS MAN-TEN Steels . . . standards for heavy-duty equipment.

USS "T-1" CONSTRUCTIONAL ALLOY STEEL

"USS," "T-1," COR-TEN, MAN-TEN and TRI-TEN are registered trademarks.

UNITED STATES STEEL

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, S. N. NOLAN, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 5 Connecticut
STREETS AND ROADS
August 5 Connecticut

BUILDINGS—BA

▲ **R. I., Providence**—DORMITORIES, etc.—BA 8/23—Rhode Island School of Design, 14 College St., dormitories and dining hall, Waterman-Angell, Benefit and Prospect Sts. $2,000,000. Cull, Robinson & Green, 355 Benefit St., Providence, R. I., archts. Fred S. Dubin & Assoc., 136 Boylston St., Boston, Mass., structural engrs. CD 6/11.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 7/23,
Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Hillsgrove, R. I., LB **$3,392,324**, est. $3,585,922, relocate Rte. No. 28, in Reading, Woburn and Wilmington. CD 6/28.

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,
Savin Constr. Corp., 10 Village St., Hartford, Conn., CA **$3,778,048**. Proj. 164-81, 4-lane c. conc. 18,130 lin. ft. Hartford-Springfield Expressway, incl. substructures for 4-span welded girder bridge over Farmington River and composite rolled beam bridge over Farmington River and composite rolled beam bridge at Kennedy Rd., Hayden Station Rd., Bradley Field Connector and Center St. Fed. Aid Proj. IN-I-139 (14). Bids June 24. CD 6/26, under LB.

▲ **United Engineers & Constructors Inc.**, 1401 Arch St., Phila., Pa., CA **$25,000,000**, electric POWER PLANT, NORWALK, CONN. Connecticut Light & Power Co., Selden St., Berlin, Conn. Kahn & Jacobs, 2 Park Ave., New York, N. Y., archt.-engrs. CD 7/24.

BUILDINGS—LB & CA

▲ **L. & R. Constr. Co.**, 84 Main St., North Reading, Mass., CA **$2,129,787**, est. $2,100,000, North JUNIOR HIGH SCHOOL, Oak St., BROCKTON, MASS. City, City Hall, Brockton, Mass. Bids July 16. CD 7/22, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
August 9, 16 Pennsylvania

BUILDINGS—BA

▲ **N. J., Princeton**—RESEARCH CENTER—BA 8/9—Princeton University and University of Penna., proton research center, $6,000,000. Gibbs & Hill, 8 Ave., New York, N. Y., engrs.

▲ **N. Y., Brooklyn**—HEALTH CENTER—BA 8/21—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. No. 1, general construction, Contr. No. 2, plumbing work, Contr. No. 3, heating and ventilating work Contr. 4, electrical work for Bushwick District Health Center, 335-349 Central Ave. Plans deposit $50. CD 11/3/55.

▲ **Pa., Phila.**—SCHOOL—BA 8/23—Bd. Educ., 21 and Winter Sts., Wanamaker Junior High School, 12 St. and Columbia Ave. $3,000,000. George M. Ewing, Western Saving Fund Bldg., engr.-archt. CD 11/5/54.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,
Gull Contg. Co. & Horn Constr. Co., Inc., 35-15 Lawrence St., Flushing, N. Y., CA **$15,547,121**, constr. 1.17 mi. 6-lane divided section of Brooklyn-Queens Expressway and 0.73 mi. access and service roads from Concord St. to Flushing Ave., incl. 4,804 ft. viaduct between Navy St. and Grand Ave. entrance and exit ramps at Tilary St. and at Flushing Ave., Kings Co. Bids Apr. 25. CD 4/19, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State ffice Bldg., Albany,
N. Y.—Peckham Road Corp., 50 Haarlem Ave., White Plains, N. Y., LB **$145,528**, est. $148,000. resurf. 2.84 mi. Route 22, near White Plains, Westchester Co.; LB **$104,725**, est. $134,000 (5 bidders) resurf. 2.59 mi. section of Route 9 between Clermont and Livingston, Columbia Co.; LB **$80,022**, est. $106,000 (3 bidders) resurf. 2.47 mi. section of Route 9, from Hudson City Line northward 2½ mi. Columbia Co.;
N. Y.—Central N. Y. Contracting Co., Inc., 224 Wolf St., Syracuse, N. Y., LB **$153,724**, est. $200,000 (8 bidders) wid'n., resurf. 2.88 mi. section, Route 19, Genessee Co.; LB **$234,975**, est. $293,000 (6 bidders) wid'n., resurf. 4.21 mi. section of Route 19 north of Brockport, Monroe Co.;
N. Y.—County Asphalt Inc., 129 Main St., Tarrytown, N. Y., LB **$92,821**, est. $94,000 (3 bidders) resurf. 1.86 mi. section of Route 9, Village of Irvington, Westchester Co.; LB **$73,905**, est. $75,000 (2 bidders) resurf. 1.46 mi. section of Route 9 (Broadway) in North Tarrytown, Westchester Co.;
N. Y.—Green Island Constr. Co., 594 Broadway, Watervliet, N. Y., LB **$371,892**, est. $421,000 (3 bidders) reconstr. 4.14 mi. South Bethlehem-Feura Bush County Road, Albany Co.;
N. Y.—Daniel F. MacNamee & Co., Inc., 741 North Ave., New Rochelle, N. Y., LB **$359,800**, est. **$388,000** (3 bidders) wid'n., resurf. 4.27 mi. section of Route 17 west and thru village of Windsor, Broome Co.;
N. Y.—Dyer-Fitts Constr. Co., Round House Rd., Binghamton, N. Y., LB **$307,705**, est. $350,000. (4 bidders) wid'n., resurf. 3.66 mi. section of Route 11, north of Castle Creek, Broome Co.;
N. Y.—Louis Argenio Inc., 381 Broadway, Newburgh, N. Y., LB **$80,486**, est. $105,000 (6 bidders) resurf. 1.93 mi. section of Route 9, Poughkeepsie north to Dorsey Line, Dutchess Co.;
N. Y.—Potter DeWitt Corp., Pavilion, N. Y. LB **$1,499,659**, est. $1,750,000. (8 bidders) reconstr., realignment Route 57 between Fulton and Oswego, Oswego Co.;
N. Y.—George B. McKenna & Son, Norwood, N. Y. LB **$248,088**, est. $430,000 (8 bidders) resurf. 13.62 mi. section of Route 37A, Ogensburg-Waddington, St. Lawrence Co.;
N. Y.—Asphalt Stone Products, Inc., Mason Rd., Schenectady, N. Y. LB **$211,043**, est. $283,000. (6 bidders) resurf. 8.38 mi. County Rd. 51, County Line-Ballston Center, Saratoga Co.;
N. Y.—Radory Constr. Corp., 94 Cherry Valley Rd., West Hempstead, N. Y. LB **$124,937**, est. $180,000. (7 bidders) resurf. 3.09 mi. section of Route 111, between Central Islip and Hauppage, Suffolk Co.;
N. Y.—Mount Vernor Contg. Corp., 459 Terrace Ave., Mount Vernon, N. Y. LB **$146,115**, est. $154,000. (4 bidders) resurf. 2.36 mi. section Route 100 north of Yonkers, Westchester Co.;
N. Y. Cipriano Bros., Inc., Mt. Morris, N. Y. LB **$101,065**, est. $106,000 (3 bidders) wid'n., resurf. 1.67 mi. section of Route 20A, Wyoming Co.;
N. Y.—received no bids July 18, reconstr. 6.27 mi. section of Route 60 and 1.83 mi. of access roads between Lanoa and point just south of Cassadaga, Chautauqua Co. Est. $2,206,000. CD 6/17.

▲ **NEW YORK**—State Dpt. P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany,
N. Y.—Bero Constr. Corp., Waterloo, N. Y., CA **$897,254**, cloverleaf traffic interchange at intersection Routes 96 and 14 at Five Points, Ontario Co. Awarded June 20.
N. Y.—Dalrymple Gravel & Contg. Co. Inc., 105 E. Chemung Pl., Elmira, N. Y., CA **$4,238,563**, exten existing Parkway Arterial (Route 17) in Corning 1.79 mi. Steuben Co. Awarded June 27. Bids June 6 CD 6/7, under LB.

▲† **Tecon Corp.**, 1201 Main St., Dallas, Tex., CA **$2,893,552**, dredging 1000 Islands for St. Lawrence Seaway from Alexandria Bay to Oak Point, NEW YORK. U. S. Eng., foot of Bridge St., Buffalo 7, N. Y. Bids May 15. CD 6/4, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,
N. Y.—Johnson, Drake & Piper, Inc., 86 Trinity Pl., New York 6, N. Y. LB **$8,812,605**, est. $10,007,000 (5 bidders) 6-lane divided section 0.77 mi. Niagara Thruway in Buffalo between Louisiana and Washington Sts., incl. 39 span 2,670 ft. viaduct between Chicago and Washington Sts. and 65 concrete piers for access ramps in vicinity of Exchange St., Erie Co.;
N. Y.—Perini Corp., 73 Montwait Ave., Framingham Mass. LB **$6,215,964**, est. $7,055,000. (10 bidders) elimination of highway-railroad grade crossings of D. & H. R.R. in and near Saratoga Springs, Saratoga Co.;
N. Y.—Terry Contg., Inc., 31 E. 27 St., New York 16, N. Y. LB **$3,460,942**, est. $3,523,000. (3 bidders) twin 2-lane 30 ft. wide, five-span 1,135 ft. welded plate girder open deck bridges to carey Route 9 over Mohawk River at Crescent, replacing present narrow two-lane structure, 0.44 mi. Albany and Saratoga Counties Bids July 18. CD 6/17.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,
Public Constructors, Inc., Browning Rd. and Kings Hy., Bellmawr, N. J., **$3,527,355** (12 bidders), constr. a 2.5 mi. section of Interstate and Defense Freeway, Route 102 at Clinton, Hunterdon Co. CD 7/15.

▲ **Hughes Foulkrod Co.**, 1505 Race St., Phila., Pa., LB **$2,448,480**. Bid 2821, pre-treatment chemical plant bldg., Torresdale Filter Plant, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids July 16. CD 6/3.

BUILDINGS—LB & CA

▲ **Combustion Eng. Co.**, 200 Madison Ave., New York, N. Y. CA Est. **$8,000,000**. 340,000 kw unit for Astoria STEAM PLANT, ASTORIA, N. Y. Consolidated Edison Co., 4 Irving Pl., New York 3, N. Y.

▲ **Irwin & Leighton**, 1505 Race St., Phila., Pa. LB **$2,104,000**. C.VIL ENGINEERING BLDG., ITHACA, N. Y. Cornell University, Ithaca, N. Y. Bids June 28 CD 6/26.

▲ **James Mitchell, Inc.**, 75 Montgomery St., Jersey City, N. J. CA Est. **$2,500,000**. completing SCIENCE ENGINEERING BLDG., HOBOKEN, N. J. Stevens Institute of Technology, 5th and Hudson Sts., Hoboken, N. J. Bids July 2, awarded July 28. CD 6/28.

▲ **American Bridge Div., U. S. Steel Corp.**, 71 Broadway, New York, N. Y. CA 9082,592 ft., steel MILL BLDG., DUQUESNE, PA. U. S. Steel Corp. 71 Broadway, New York 6, N. Y. CD 7/29.

▲ **Charles Wolfson**, 2401 N. 33 St., Phila., Pa., Separate contracts, **$2,000,000**. 148-unit RESIDENTIAL DEVELOPMENT, Hampton Hills-Lower Southampton Twp., FEASTERVILLE, PA.

▲ **Combustion Eng. Co.**, 200 Madison Ave., New York, N. Y. CA Est. **$7,000,000**. 330,000 kw unit for PLANT near HARRISBURG, PA. Pennsylvania Power & Light Co., N. 9 and Hamilton Sts., Allentown, Pa.

▲ **Eugene Crown**, 1411 City Line Ave., Phila., Pa., Separate Contracts, **$2,500,000**. 90-unit RESIDENTIAL DEVELOPMENT, Paddock Rd., Merion Gulf Manor, HAVERTOWN, PA. Henry S. Berg, 1411 Walnut St., Phila., archt. CD 3/5.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. CA **$3,589,000**. Benjamin Franklin SENIOR HIGH SCHOOL, PHILA., PA. Bd. Educ., 21 and Winter Sts., Phila., Pa. Bids May 2. CD 5/21, under LB.

▲ **Victor R. Beauchamp, Inc.**, 431 Cedar St. N.W., Wash., D. C. CA **$1,728,890**. HOSPITAL, CHEVERLY, MD. Prince George's Co. Hospital, Cheverly, Md Bids July 12. CD 7/17, under LB.

▲ **Gelman Constr. Co.**, Investment Bldg., Wash., D. C. CA Est. **$3,000,000**. 13 story, 619-unit, concrete APARTMENT, 4201 Cathedral Ave. N.W., WASH., D. C. Cathedral Avenue Properties, Inc., c/o contractor Berla & Able, 2000 "P" St. N.W., Wash., D. C., archts.

(Continued on page 67)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

Cement Mixer Takes 60° Grade, one of many Four Wheel Drive tests. In all these grueling tests, Cities Service Lubricants make the grade and then some! They've done it for 20 years.

Early Four Wheel Drive Truck is one of vehicles in firm's museum. Founded in 1910, the company's first production amounted to 12 vehicles. Today, it is thousands yearly.

Toughest trucks made— Toughest lubricants used!

Four Wheel Drive Auto Company has been Cities Service customer for 20 years!

If you think things are tough on the trucks at your construction job or quarry, you should visit the Four Wheel Drive plant at Clintonville, Wisconsin.

There you'd see famous Four Wheel Drive trucks going through tests tougher than they'll probably ever meet on your job or anyone else's.

Ditto for the Cities Service Lubricants that Four Wheel Drive uses.

For what could be tougher on a truck and its lubricants than grinding up a hill in loose sand . . . sinking axle deep in a mud bath . . . driving diagonally across a washboard test ground . . . and climbing a 60 degree grade of dirt or gravel?

Make no mistake, Cities Service Lubricants meet the test . . . and have for the past 20 years at Four Wheel Drive Auto Company.

So it stands to reason that however tough the terrain and conditions on *your* job, Cities Service C Series Motor Oils and Trojan H Multi-Purpose Grease will more than make the grade . . . especially if you follow the expert recommendations of your Cities Service Lubrication Engineer.

For all the details, call the nearest Cities Service office, or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

(Continued from page 65)

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 6 West Virginia
STREETS AND ROADS
August 9 Kentucky

BUILDINGS—BA

▲† **S. C., Charleston**—HOUSING—BA About 9/15—U.S. Air Force, Charleston Air Force Base, North Charleston, 600 Capehart Housing units, Charleston Air Force Base, $10,000,000. CD 9/19/54, Under Airports.

HEAVY CONSTRUCTION—LB & CA

▲ **Brown & Root, Inc.**, 4100 Clinton Dr., Houston, Tex. CA Est. $7,672,480, 60 mi. exten. gas lines to tie in Southern National Lines to gas fields in Plaquemines, St. Bernard and Jefferson Parishes, LOUISIANA. Southern Natural Gas Co., Watts Bldg., Birmingham, Ala. CD 6/27.

BUILDINGS—LB & CA

▲ **Combustion Eng. Co.**, 200 Madison Ave., New York, N. Y., CA Est. $6,000,000. two 240,000 kw units for Port Everglades POWER PLANT, FLORIDA. Florida Power & Light Co., 25 S.W. 2 St., Miami, Fla. CD 2/20/53, under Unclassified.

▲ **Kitimat Corp.**, 49 Nurmi Dr., Fort Lauderdale, Fla. Owner Builds. $2,500,000. Co-operative APARTMENT, 333 Sunset Dr., FORT LAUDERDALE, FLA. M. R. Burggraf, 145 N.E. 26 St., Fort Lauderdale, Fla., archt. Shinn & Hutcheson, 401 Coral Way, Coral Gables, Fla., structural engrs. CD 5/24.

▲ **Daniel Constr. Co.**, P.O. Box 5774, Jacksonville, Fla., CA $4,777,777. 19 story, 504-room rein.-con. Robert Meyer HOTEL, JACKSONVILLE, FLA. Meyers Hotels, Comer Bldg., Birmingham, Ala. Bids June 11. CD 6/19, under LB.

▲ **Combustion Eng. Co.**, 200 Madison Ave., New York, N. Y., CA Est. $4,000,000. 120,000 kw unit for P. L. Bartow STATION, ST. PETERSBURG, FLA. Florida Power Corp., 101 S. 5 St., St. Petersburg, Fla.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 6 Indiana
STREETS AND ROADS
August 14 Michigan

BUILDINGS—SLC

▲ **Ill., Chicago**—GARAGE—Peerless Weighing & Vending Machine Co., c/o Friedman Alschuler & Sincere, archts., 223 W. Jackson Blvd., soon lets contract 8 story parking garage, Washington and Clark Sts. $5,000,000. CD 6/6.

▲ **Wis., Appleton**—SCHOOL—Appleton Central High School, Inc., 213 E. Wisconsin Ave., soon lets contract Central Catholic High School, $2,000,000. Maurey Lee Allen, Irving Zuelke Bldg., archt. Caudill-Rowlett-Scott, Bryan, Tex., assoc. archts.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—Dpt. Hys., Columbus, Zone 15,

O.—**E. K. Bridge Constr. Co.**, 2416 Byrne Rd., Toledo, O., CA $2,665,050. Parts No. 1 and 2, Type T-71, and structures 17.099 mi. S.R. 384, Sections (0.10-3.76) (0.00,9.97, U.S.R. 6, Section 3.78, F-1018 (3) F-1018 (4), Parts Nos. 1 and 2, Henry and Williams Counties;

O.—**Maxon Constr. Co. Inc.**, 2600 Far Hills Ave., Dayton, 9, O., CA $2,542,588, Type 71 and structures 1.293 mi. U.S. Rte. 25 in City of Dayton, incl. cont. steel beam bridge over Ramp N-17, steel girder bridge over Keowee St., and bridge over Ramps N-17 and M-15 and under Westbound State Rt. 4, cont. steel beam bridge over Ramps N-17 and N-15 and northbound Expressway, Montgomery Co.;

O.—**Frysinger Constr. Co.**, 3770 N. High St., Columbus, O., CA $549,229. Type T-71 and structures, 2.126 mi. U.S. Rte. 62 in Morgan Twp. Knox Co. and Washington Twp., Village of Utica, Licking Co., grade separation with B. & O. R.R. Br. No. LIC 62-1893 over B. & O. R.R. and Harris St. Knox and Licking Counties. Bids July 9, Grand total $7,756,867. CD 7/19, under LB.

BUILDINGS—LB & CA

▲ **Dunlop & Johnston, Inc.**, 1950 Lee St., Cleveland, O., LB $3,477,119 (4 bidders) 404-dwelling units, Garden Valley HOUSING, CLEVELAND, O. Cleveland Metropolitan Housing Auth., 1325 W. 28 St., Cleveland 13, O. Bids July 18. CD 6/19, under LB.

▲ **Turner Constr. Co.**, 150 E. 42 St., New York 17, N. Y. CA Est. $20,000,000. 23 story OFFICE, 105 W. Monroe St., CHICAGO, ILL. Harris Trust & Savings Bank, 111 W. Monroe St., Chicago 3, Ill. Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago 3, Ill., archts.

▲ **Central Mfg. Dist., Inc.**, 38 S. Dearborn St., Chicago 3, Ill., CA $3,000,000, 110,000 sq. ft. addn. to plant on premises, FRANKLIN PARK, ILL. Motorola, Inc., 4545 W. Augusta Blvd., Chicago, Ill.

▲ **Ray J. Benoit, Inc.**, 333 S. Schuler, Kankakee, Ill., CA $2,100,000, 5 story, bsmnt., HOSPITAL addn., KANKAKEE, ILL. St. Mary's Hospital, 192 S. 5th St., Kankakee, Ill. Bids June 18. CD 6/27.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 7 Colorado — August 8 Kansas
August 20, 21 Texas
STREETS AND ROADS
August 6 Colorado — August 8 Kansas
August 13 Minnesota — August 20 Oklahoma
August 20, 21 Texas

HEAVY CONSTRUCTION—SLC

▲ **Ark., Pine Bluff**—HUMP YARD—St. Louis Southwestern Ry. (Cotton Belt Rte.) J. M. Lowry, ch. engr., Tyler, Tex., soon lets contract constr. electronic gravity "hump" yard, incl. all automatic controls and switching. $5,250,000. CD 6/6.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 6/27,

M. E. Gillioz, Monett, Mo., CA $2,566,439, 24 ft. c. conc. 9.383 mi. Greene Co. CD 7/15, under LB.

▲† **General Electric Co.**, Electric Bldg., Omaha, Nebr., CA $3,733,563 (2 bidders) generators, Units 4 and 5, Garrison Dam power plant, near Riverdale, Inv. 32-015-57-48, NORTH DAKOTA. U. S. Eng., Riverdale, N. D. Bids June 4. CD 6/12, under LB.

▲ **Babcock & Wilcox Co.**, Beaver Falls, Pa., CA $4,135,651, initial steam conditions-850 psig, 900°; CA $4,247,387, final steam conditions-1800 psig, 100/1000°, steam boiler for generating power plant at Sheldon Station, near Hallam, NEBRASKA. Consumers Public Power Dist., Columbus, Neb. Bids May 7. CD 5/31, under LB.

▲† **U. S. Eng.**, Box 61, Tulsa 2, Okla., cancelled bids to have been opened July 24, nitroguanidine facilities producing area, Oklahoma Ordnance Works. ENG-14-066-57-55, PRYOR, OKLA. Est. $3,000,000-$7,000,000. CD 7/17.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 7/23,

Tex.—**C. C. Booth**, P.O. Box 508, Stephenville, Tex., LB $77,030, grading, structures, base and surf. FM Hy. 1954, 2.5 mi. east of FM Hy. 368 southeast to State Hy. 79. Control No. 2112-1-1, Fed. Proj. No. S. 2195(1), Archer Co.;

Tex.—**H. B. Zachry Co.**, P.O. Box 10188, San Antonio, Tex., LB $999,774, flex. base and hot mix b. conc. 7.828 mi. from Merkel to Tye, Hy. US 80, Control No. 16-4&5-29&37, Fed. Proj. No. I 444 (42), Taylor Co.;

Tex.—**Allen M. Campbell Co.**, P.O. Box 836, Tyler, Tex., LB $113,134, flex. base and b. conc. 2.46 mi. Hy. US 59, Proj. C. 63-6-16, Shelby Co.;

Tex.—**H. V. Caver, Inc.**, Atlanta, Tex., LB $162,908, grading, structures, base and surf. 7 mi. Hy. FM 1404, Proj. S 2114(1), Upshur Co.;

Tex.—**F. A. Seidel & Sons**, Rte. 1, Balinger, Tex., LB $97,659, grading, structures, base and surf. 9.244 mi. Hy. FM 2405, Proj. S 2179(1), Runnels and Taylor Counties;

Tex.—**Texas Bitulithic Co.**, P.O. Box 10365, Dallas, Tex., LB $2,063,961, flex. base, c. conc. (base), hot mix b. conc. 2.806 mi. Hy. Loop 217, Proj. U 1101 (8) & I. 1101(9), Tarrant Co.

Tex.—**South Texas Constr. Co.**, P.O. Box 3536, Corpus Christi, Tex., LB $162,526, flex. base, b. conc. 1.718 mi. Hy. US 59 State Hy. 44, 359, 339 and 173, Proj. C. 86-10-14, C 237-5&6-4&4 & C. 517-4-8, Duval Co.;

Tex.—**Ivan Dement, Inc.**, P.O. Box 1787, Amarillo, Tex., LB $369,645, grading, structures, base and surf. 11.047 mi. Hy. FM 1265, Proj. S. 2013(2), Lipscomb Co.;

Tex.—**Fred Hall & Son**, P.O. Box 4887, Valley Mills, Tex., LB $565,714, grading, structures, base and surf. 14.002 mi. Hy. FM 2320, Proj. S. 2176(1), Hunt Co.;

Tex.—**R. C. Buckner**, P.O. Box 609, Jacksonville, Tex., LB $144,884, grading, structures, base and surf. 7.854 mi. Hy. FM 942, Proj. R. 1877-2-1, Polk Co.;

Tex.—**John T. Holland Constr. Co.**, P.O. Box 20096, Houston, Tex., LB $570,136, cement stab. base, c. conc. pavt. 0.475 mi. State Hy. 73, Proj. I 1052 (38), Harris Co.;

Tex.—**Foley & Williams, Contractors**, 243 Owen Bldg., Tyler, Tex., LB $98,684, flex. base and b. conc. 1.014 mi. Hy. Loop 154, Proj. C. 206-8-3, Rusk Co.;

Tex.—**D. H. Buchanan Co.**, 1318 N. 5th St., Temple, Tex., LB $216,420, grading, structures, base and surf. 12.36 mi. Hy. FM 2408, 1853 & FM, Proj. S 2193(1) & S. 2194(1), Stephens and Eastland Counties. CD 7/8.

▲ **Pioneer Natural Gas Co.**, 3rd and Taylor Sts., Amarillo, Tex., Owner Builds. $2,100,000. 70 mi. gas pipe line from fields to Amarillo, $2,500,000; compressor station, Amarillo, TEXAS. CD 4/12.

▲ **H. B. Zachry Constr. Div.**, Box 3, Houston, Tex., CA $2,310,000, 77 mi. 12, 16 and 20 in. crude oil line between Corsicana and Beaumont, part of 203 mi. line from Midland to Beaumont, TEXAS. Magnolia Petroleum Co., c/o Magnolia Bldg., Dallas, Tex. CD 1/25/54.

▲ **Magic Mountain, Inc.**, c/o Harold W. Brewer, archt., 5782 W. 38 St., Wheat Ridge, Colo. Separate Contracts. $3,500,000. playland, incl. skating rink, 3 restaurants, fairyland characters, an old western town, full scale Indian village, a City of Mars, swimming pool, picnic areas, etc., GOLDEN, COLO.

BUILDINGS—LB & CA

▲ **Robert H. Smith & Co.**, 1915 Kolfahl St., Houston, Tex., CA $2,150,000, RESEARCH CENTER EXPANSION, HOUSTON, TEX. Humble Oil & Refining Co., 1216 Main St., Houston, Tex. Bids July 2. CD 6/14

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 14 California
STREETS AND ROADS
August 14 California

BUILDINGS—BA

▲† **Calif., Point Mugu**—HOUSING—BA 8/15—P. Wks. Office, 11th Naval Dist., San Diego, constr. 360 unit Capehart Housing, at Point Mugu, $5,600,000. Hugh Gibbs, 441 East 1st St., Long Beach, archt. CD 1/16.

▲ **Calif., Berkeley**—ADMINISTRATION—BA 8/16—University of California, Administration Bldg., Bd. Regents, Berkeley, 7 story, bsmnt. and 2 story wing, 140,500 sq. ft. administration bldg. $3,000,000. Plans deposit $100. Welton Beckett & Assocs., 5657 Wilshire Blvd., Los Angeles, archts. CD 2/15.

HEAVY CONSTRUCTION—LB & CA

▲ **Merritt-Chapman & Scott Corp.**, 261 Madison Ave., New York, N. Y. LB $53,867,000, est. $61,267,500 (engineers cofferdam design), completing constr. of Rocky Reach Dam near Wenatchee, WASHINGTON. Chelan County Public Utility Dist., 327 N. Wenatchee Ave., Wenatchee, Wash. Bids July 23. CD 6/26;
Rocky Reach Dam Builders (Arundel Corp., Pier 2, Pratt St., Baltimore, Md., L. E. Dixon Co., 18404 Sherman Way, Reseda, Calif., The Hunkin-Conkey Constr. Co., 1740 E. 12 St., Cleveland, O. and American Pipe & Constr. Co., 4635 Firestone St., South Gate, Calif.) Wenatchee, Wash. LB $52,413,078 (bidders cofferdam design), completing constr. of Rocky Reach Dam (Washington).

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Calif. Bids opened 7/18,

Griffith Co., 1060 S. Broadway, Los Angeles 15, Calif. LB $4,199,746 (7 bidders) 2 mi. graded and paved and rein.-con. separation structures and pedestrian undercrossing between 0.3 mi. south of Moorpark St. and 0.3 mi. west Laurel Canyon Blvd., Los Angeles Co. CD 6/14.

BUILDINGS—LB & CA

▲ **Morley Constr. Co.**, 7700 Sunset Blvd., Los Angeles, Calif., LB $2,897,000, est. $2,250,000 (7 bidders) frame, stucco Mount Gleason JUNIOR HIGH SCHOOL, Tujunga, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Arthur & Ross Hutchason, 816 W. 5th St., Los Angeles, Calif., archts. Bids July 12. CD 4/8/55.

▲ **Kemp Bros. & George Thompson**, 8750 Mettler St., Los Angeles, Calif. LB $2,712,000 (5 bidders) Westgate HIGH SCHOOL, POMONA, CALIF. Pomona Unified School Dist., 605 N. Park Ave., Pomona, Calif. Bids July 23. CD 9/27.

▲ **Cahill Bros.**, 150 Sansome St., San Francisco, Calif. CA Est. $4,000,000. 12 story, steel, concrete OFFICE BLDG., SAN FRANCISCO, CALIF. American Trust Co., 464 California St., San Francisco, Calif. Meyer & Evers, 149 California St., and Harry A. Thomsen, Jr., 315 Montgomery St., San Francisco, Calif., archts. CD 10/24/49.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
August 7 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **Terminal Constr. Div. of Henry J. Kaiser Co. (Canada) Ltd.**, Dominion Square Bldg., Montreal, Que. and **Tallman Constr. Co. Ltd.**, 600 Panet St., Winnipeg, Man., CA est. $6,500,000. (3 bidders) runways, taxiways and other facilities, Edmonton International Airport EDMONTON, ALTA. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids July 12.

▲ **NEWFOUNDLAND**—Dpt. P. Wks., Parliament Bldgs., St. John's, Newfoundland,

Concrete Products (Newfoundland) Ltd., St. John's, Newfoundland, CA About $5,000,000. constr. of and application of base course 38½ mi. Trans-Canada Hy. from junction of Kenmouth and Topsail Rds. to Hodgewater Line. Bids June 20. CD 6/4.

BUILDINGS—LB & CA

▲ **MacLab Constr. Co. Ltd.**, 12229 125 Ave., Edmonton, Alta., Owner Builds, $2,500,000. low-rental APARTMENT, on 17-acre site, on 82 St. and 128 Ave., EDMONTON, ALTA.

▲ **Perini Ltd.**, 49 Jackes Ave., Toronto, Ont. CA Est. $2,500,000. 14 story, 84x105 ft., rein.-con. OFFICE, TORONTO, ONT. First Holdings Ltd., 336-344 Bay St., Toronto, Ont. Harry B. Kohl, 1407 Yonge St., Toronto, archt. Farkas & Barron of Canada Ltd., 7 Adelaide St. E., Toronto, Ont., engrs. Awarded July 18. CD 3/5/56.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Pipe Line Engineering Co. & Oklahoma Pipeline Constructors**, 6612 Harry Hines Blvd., Dallas, Tex., U. S. A., CA $3,600,000. 90 mi. 30 in. crude line, El Pilon to Caripito, VENEZUELA. Creole Petroleum Co., Caracas, Venezuela. CD 4/9.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

▲† **Portugal**—Direccao de Servico De Infra-Estruturas DA Forca Aerea Portuguesa (Subseccao 2.2 Aerodromos NATO) Avenida Antonio Augusto de Aguiar 21-3, Dt. Lisbon, will take bids about eight weeks after contract documents are available for maritime air bases at Espinho, $2,660,000 and at Montijo $2,520,000. Projects to be completed by 1959, include excavation, concrete and bituminous paving, grading, etc. Interested U.S. Firms should file application with owner. Eligible companies will be invited to obtain contract documents through their legal representatives Aug. 15 for Espinho Base and Aug. 16 for Montijo Base. U. S. firms not already certified to participate in NATO work should send a resume of their qualification to Trade Development Div., Bureau of Foreign Commerce, Dpt. Commerce, Wash. 25, D. C., U.S.A.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ind., Richmond**—Richmond Water Wks. Corp., J. W. Reiney, pres., reservoir holding 2 billion gal. and 60 ft. earthen dam on 300 acre lake along Middleboro Pike, north of city with concrete spillways across east branch of Water River along S.R. 227, pumping plant and mains, etc. $3,000,000. CD 4/11/56.

SEWERS, WASTE DISPOSAL

▲ **Me., Bangor**—City, James L. MacLeod, city engr., City Hall, parking facilities and interceptor sewerage sys.; Kenduskeag Stream, $1,000,000. Constr. 1958. CD 8/16/45.

▲ **O., Cleveland**—City, Dpt. P. Service, Louis L. Drassler, dir., City Hall, Zone 14,

Big Creek Branch Sewer from W. 52 St. to Pearl Rd. $350,000;

Lee Rd. relief sewer Contr. 2 from northerly city limits to Mill Creek, $400,000;

sewer in East Blvd. from Euclid to Bellflower & Bellflower St. from E. Blvd. to 1st manhole east of Ford Dr., $90,000.

combined sewers in Longwood Ave. from E. 35 to E. 38 Sts. E. 38 St. from Longwood Ave. to Scovill Ave. $130,000.

Kingsbury Run relief sewer from E. 37 St. to Sidaway Ave. $3,000,000.

sewers in Manufacturing Rd. from W. 160 St. to Industrial Parkway and Industrial Parkway from 2,625 ft. south of Puritas Rd. $250,000.

sewers, appurtenances in E. 140 St. from Union to Bartlett Ave. $120,000.

sewers in E. 155 St. from Judson to Glendale Aves. $150,000.

sewer reconstr. W. 3 St. from St. Clair to Superior Ave., over $75,000.

sewer reconstr. in W. 6 St. from Superior Ave. to Front St. $120,000. Jay R. Katz, city engr. CD 11/7/52.

▲ **Tex., Garland**—City, City Hall, Central Sewage Disposal Plant, $2,000,000. CD 11/16.

STREETS AND ROADS

▲ **Calif., Los Angeles**—City Council, City Hall, access roads to proposed Major League Ballpark, $2,000,000.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

Essex and Passaic Counties—3 mi. Route 21 Freeway from Roosevelt Ave., Belleville, to Kensington Ave., Passaic, $2,000,000.

Warren and Hunterdon Counties—12 mi. section of Freeway 102 between Clinton and Still Valley, $2,000,000.

▲ **QUEBEC**—Province of Quebec, Dpt. Roads, Quebec City,

Montreal—highway and bridges, Thousand Islands part of Laurentian Blvd. $3,500,000. Letendre & Monti, 24 De Montmorency St., Quebec City, consult. engrs.

EARTHWORK, WATERWAYS

▲ **Calif., Los Angeles**—Los Angeles Co. Flood Control Dist., 2250 Alcazar St.,

Benedict Canyon Flood Control Channel and Debris Basin, Unit I, $400,000.

Big Dalton Wash Part 1, Franeisquita Ave. to Cypress St., $2,100,000.

Big Dalton Wash Part 2, Cypress St., to San Dimas Wash, $1,800,000.

Big Dalton Wash, Part 3 San Dimas Wash to Gladstone Ave., $500,000.

Big Dalton Wash, Part 4, Gladstone Ave. to Alambra, $550,000.

Burbank Western Flood Control Channel, Part 4, Roscoe Blvd. to and incl. Debris Basin, $450,000.

Caballero Creek Channel and Debris Basin, $300,000.

Centinella Creek Channel, Ballona Creek to Jefferson Blvd., $450,000.

Compton Creek Channel repairs, $200,000.

Lopez Canyon Channel and Debris Basin, $150,000.

Los Angeles River Flood Control Channel, repair to soft bottom, Atlantic Ave. to Downey, $1,300,000.

Los Angeles River, repairs to Soft bottom Randolph St. to Atlantic Ave., $2,250,000.

Rubio Diversion channel, $900,000.

San Dimas Wash, Part 1, Big Dalton Wash to Grand Ave., $1,650,000.

Santa Anita Wash, Part 1, Rio Hondo to Santa Fe R.R., $1,350,000.

Santa Anita Wash Flood Control Proj., Part 2, Santa Fe R.R. to and incl. Debris basin, $450,000.

Sawtelle Westwood Flood Control Proj., Part 5, Sepulveda Channel, National Blvd. to Pico and Sawtelle Channel, $2,550,000.

Sawtelle Westwood Channel, Part 6, Sepulveda Channel Pico Blvd. to Morega Dr., $450,000.

Sierra Madre Channel, Santa Anita Wash to Santa Anita Ave., $125,000.

Stough Canyon Channel and Debris basin, $325,000.

Upper Rio Hondo Channel, Part 2, Valley Blvd. to Lower Azusa Rd., $1,000,000;

Upper Rio Hondo River Flood Control Proj., Part 3, Lower Azusa Rd. to Peck Rd., $450,000.

Wilson Canyon Flood Control Proj., Mansfield Channel and Debris Basin, $350,000. CD 2/12/47.

LATIN AMERICA

▲ **Venezuela**—Dpt. P. Wks., Caracas, plans 3.4 mi. tunnel thru Fila Notre Mountains and 10.5 mi. highway connecting Altamira section of Caracas with Caraballeda, $60,000,000. Bids may be taken this month.

PUBLIC BUILDINGS

▲ **Calif., Blythe**—SCHOOL—Palo Verde Unified School Dist., 7th Ave. and Hobsonway, plans by Harold Gimeno, 1400 N. Sycamore St., Santa Ana, 88,346 sq. ft., stud and stucco concrete slab floor Blythe Senior High School. $1,800,000.

▲ **Calif., Hawthorne**—SCHOOL—Centinella Valley Union High School Dist., 365 Hawthorne Way, plans by Flewelling & Moody, 766 Colorado Blvd., Los Angeles, Lawndale High School Lawndale, $2,196,000.

▲ **Calif., La Verne**—SCHOOL—Bonita Union High School Dist., 1124 E. Bonita Ave., plans by Flewelling & Moody, 766 Colorado Blvd., Los Angeles, 61,000 sq. ft., Bonita Union High School. $1,000,000. CD 3/16/56.

▲ **Calif., Los Angeles**—WOMENS DETENTION FACILITIES—Bd. Supervs., Los Angeles, 501 Hall of Records, plans by Albert C. Martin & Assoc., 333 S. Beaudry Ave., women's detention facilities, Biscailuz Center, Cap. Proj. 8457, $4,667,000. CD 6/2/56.

▲ **Calif., Monrovia-Duarte**—SCHOOL—Monrovia-Duarte High School Dist., bond election Oct. 22, finance completion of new Duarte High School renovation of existing high school. $1,950,000. CD 1/3/54.

▲ **Calif., Redwood City**—SCHOOL—Sequoia Union High School Dist., D St., Broadway and El Camino Real, $3,975,000 bond election Oct. 15, school bldg. program. CD 5/27/52.

▲ **Calif., Sacramento**—RETIREMENT SYS. BLDG.—State Div. Architecture, 1120 N. St., 6 story state retirement sys. bldg. $6,126,600.

▲ **Conn., Ansonia**—HIGH SCHOOL—Town, Town Hall, plans by O. C. S. Ziroli, P. O. Box 1220, Bridgeport, high school. $1,000,000.

▲ **Conn., Middletown**—SCHOOL—Town, Town Hall, high school. $1,000,000.

▲† **Conn., New London**—LABORATORY—Dist. P. Wks. Office, Third Naval Dist., 90 Church St., New York, N. Y., plans by Douglas Orr, 111 Whitney Ave., New Haven, 3 story masonry concrete laboratory, Underwater Sound Laboratory, Fort Trumbull. $4,000,000. Hubbard, Lawless & Blakeley, 110 Whitney Ave., New Haven, consult. engrs. CD 1/25.

▲ **Ky., Independence**—SCHOOLS—Kenton Co. Bd. Educ., plans by Robert Cromer, consult. engr.-archt. 18 E. 4th St., Cincinnati, O., two 2 story, bsmnt. brick, elementary schools, at Decoursey and Piner, $1,000,000. Constr. late 1957. CD 6/4/56.

▲ **Mass., Boston**—LABORATORY—Commonwealth of Mass., Health Dpt., State House, Boston, public health laboratory for manufacture of Salk Polio Vacine and other vacines, $1,500,000. Constr. 1958.

▲ **Mo., Clayton (St. Louis 5, P. O.)**—HOSPITAL—St. Louis Co., Bd. P. Wks., William H. Guhman, chn., Court House, Clayton 5, Mo., plans by Leo A. Daly Co., 411 N. 7th St., St. Louis, Zone 1, 4 story, brick, rein.-con., hospital addn. for mental and chronic patients, St. Louis Co. Hospital, 600 S. Brentwood Blvd., $2,500,000; expanding heating, plumbing and kitchen facilities at present hospital, $1,000,000. CD 11/29/55.

▲ **Neb., Lincoln**—DORMITORY—University of Nebraska, 12 and R Sts., mens dormitory on downtown Lincoln Campus, $3,000,000. to be financed by revenue bonds.

▲ **N. H., Hampton**—SCHOOL—Co-operative School Dist., Towns of Hampton, Seabrook, Hampton Falls and North Hampton, Hampton, plans by Tracy & Hildreth, 4 Davis Court, Nashua, high school, Park Ave. 1 Landry Rd., $1,000,000. CD 2/25.

▲ **N. J., Elizabeth**—COURT HOUSE—Bd. Freeholders, Union Co., court house bldg. to house county courts. $2,500,000.

▲ **N. J., Parsippany**—SCHOOL—Bd. Educ. of Parsippany Twp. Troy Hills, 2 JUNIOR HIGH SCHOOLS and 1 SENIOR HIGH SCHOOL, $5,000,000.

▲ **N. Y., Bellmore**—SCHOOL—Bd. Educ., Bellmore, voted bonds June 25, elementary school 10-acre site, Shore Rd. and Marine Pl., $1,560,000. Work to go ahead in September. CD 5/29.

▲ **N. Y., Farmingdale**—SCHOOL—Bd. Educ., Farmingdale, defeated bonds June 26, 2,000 pupil high school, $5,995,000; East Farmingdale Elementary School addn., $885,000; Woodward Parkway Elementary School addn., $395,000. CD 6/10.

▲ **N. Y., New York**—BOILER PLANT, etc.—Bd. Higher Educ., 695 Park Ave., New York, Zone 21, Proj. HN-84, reconstr. boiler plant and electrical services in Compton Hall, City College, $1,000,000. William H. Byrne, 50 Broadway, New York, Zone 4, consult. engr. CD 10/20/44.

▲ **N. Y., New York**—SCHOOL—Bureau Constr. Bd. Educ., 45-12 Crescent St., Long Island City, plans by William Lescare, 211 E. 48 St., Zone 17, and Kahn & Jacobs, 2 Park Ave., Zone 16, Proj. E-295, High School of Industrial Art and P. S. 59 at west side of Second Ave. between 56 and 57 Sts. $8,400,000, to go ahead 1957. CD 7/7/55.

▲ **N. Y., New York**—POLICE and FIRE DEPARTMENT—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Knappe & Johnson, 390 E. 150 St., Zone 55, D-110, Engine Co. No. 76, Ladder Co. No. 22 and Battalion Chief Office and PO-66 24 Precinct Station House, combination at 145-51 W. 100 St. $1,235,000. CD 5/28.

▲ **O., Cleveland**—EXHIBITION HALL—City, City Hall, bond election Nov. 5, exhibition hall, $15,000,000. CD 6/21.

▲ **O., Columbus**—DENTISTRY, etc.—Ohio State Dpt. P. Wks., 705 Ohio Depts. Bldg, 4 story brick dentistry bldg. addn. $1,400,000; 4 story, brick, limestone fine arts bldg., $1,100,000.

▲ **O., Delaware**—SCHOOLS—Delaware School Dist. Bd. Educ., Delaware, $1,555,400 bond election Nov. 5, high school and imprvs. existing schools. CD 5/10/54.

▲ **O., Marlboro**—SCHOOL—Marlington School Dist., Marlboro, plans by Kling & Frost, 661 Wick Ave., Youngstown, high school, $1,140,000. CD 5/13.

▲ **O., Sebring**—SCHOOL—Mahoning Local School Dist., Sebring, plans by Kling & Frost, 661 Wick Ave., Youngstown, high school, $1,000,000.

▲ **Okla., Tulsa**—SCHOOL—Bd. Educ., 410 S. Cincinnati St., plans by Leon B. Senter, Philtower Bldg., Orville Wright Jr. High School, $1,500,000. CD 6/18.

▲ **Pa., Perrysville**—SCHOOL—North Allegheny Jt. School Auth., 350 Cumberland Ave., 1 and 2 story, brick, block Ingomar Junior High School, Ingomar. $2,500,000, Mitchell & Ritchey, Plaza Bldg., Pittsburgh, archts.

▲ **Pa., Pittsburgh**—MEDICAL, etc.—Allegheny General Hospital, 320 E. North Ave., plans by Harry H. Lefkowitz, 504 Standard Life Bldg., 4½ story, 120x120 ft., brick, block medical bldg. and shops, $3,000,000.

▲ **Tenn., Greeneville**—HOSPITAL—State Mental Health Comm., Greeneville, constr. 400 bed hospital for mentally retarded. $3,000,000.

▲ **Tex., Amarillo**—SCHOOLS—Amarillo Independent School Dist., Amarillo, voted bonds June 14, Junior High School unit, $1,400,000; Elementary School No. 9, $600,000; Elementary School No. 8, $650,000; Elementary School No. 7, $410,000; grade school, $400,000; power plant, $150,000. CD 10/13/55.

▲ **Tex., College Station**—APARTMENTS—A&M College of Texas, College Station, plans by Philip G. Norton, A&M Sys. Archts., 316 Admin. Bldg., twenty five 2 story, masonry type apartments for married students. $2,500,000. Bernard Johnson & Assocs., 4926 Travis St., Houston, and C. J. Godwin, 2317 Franklin St., Bryan, consult. engrs. CD 5/10.

▲ **Wash., Seattle**—SCHOOL—School Dist. No. 1, 815 4 Ave. N, plans by Mallis & DeHart, Lyon Bldg., Zone 4, Northwest Junior High School. $1,845,042.

▲ **W. Va., Huntington**—WARD—State Bd. Control, Charleston, Zone 5, plans by Vecellio & Kreps, Odd Fellows Bldg., Charleston, ward bldg. and $200,000 addn. to an employees' quarters bldg. at Huntington State Hospital, $1,625,000.

▲ **Wis., Menasha**—SCHOOL—Bd. Educ., Menasha Junior High School. $1,400,000.

▲ **Ont., London**—ENGINEERING SCIENCE—University of Western Ontario, Ross B. Wilson, comptroller, plans by O. Roy Moore & Co., 260½ Dundas St., 2 story, bsmnt., stone engineering science bldg. $1,500,000. CD 5/29/56.

COMMERCIAL BUILDINGS

▲ **Conn., Norwalk**—YMCA BLDG.—Young Men's Christian Assn., West Ave., Y.M.C.A. bldg. $1,000,000.

▲ **Ind., Gary**—STORE, etc.—Montgomery Ward & Co., 619 W. Chicago St., Chicago, Ill., plans by Frederick W. Collins, 400 5th Ave., 1 and 2 story, 65,000 sq. ft. store and 35,000 sq. ft. warehouse, $2,000,000.

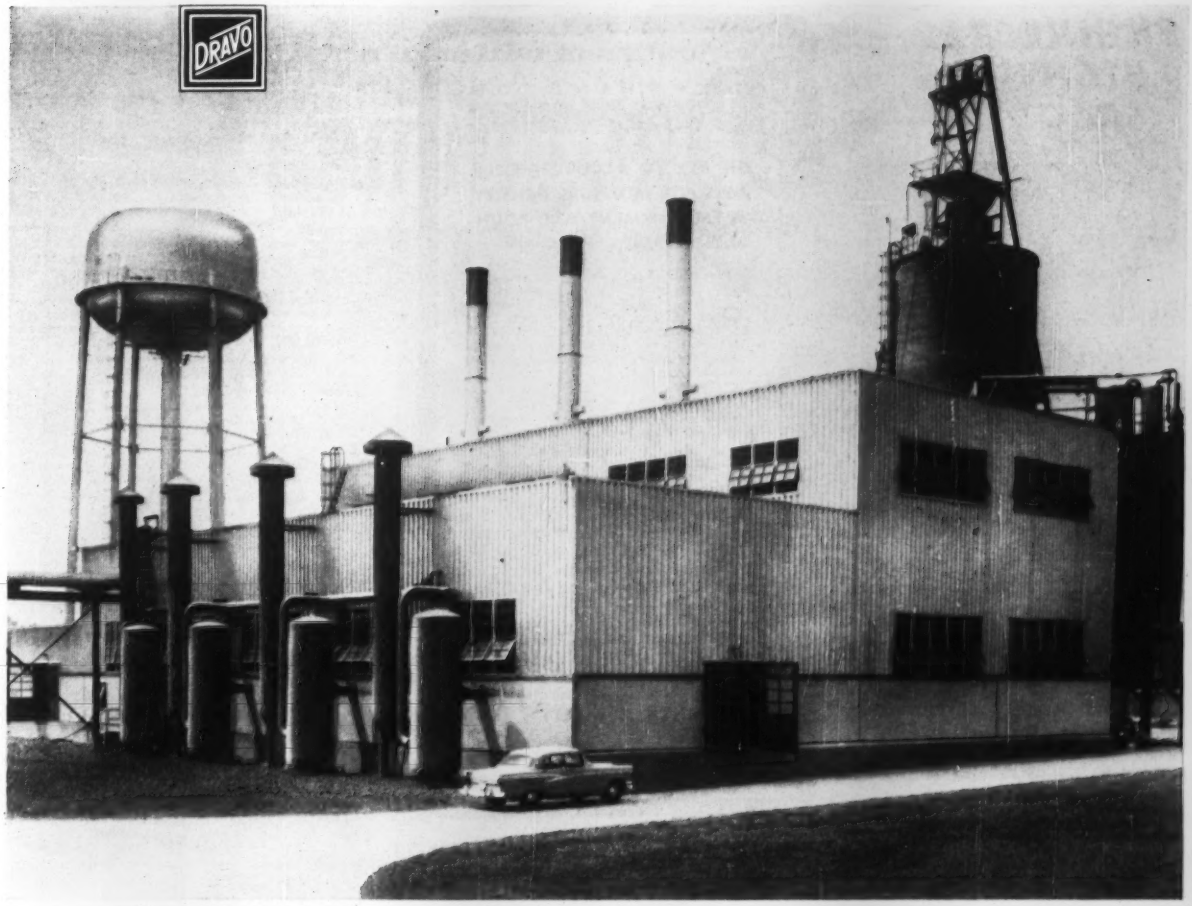
▲ **Iowa, Okoboji**—HOUSING—Topro Corp., Okobji housing development, on West Okoboji Lake. $1,500,000.

▲ **N. Y., Brooklyn**—APARTMENTS—United Housing Foundation, Inc., 11 W. 42 St., New York, Zone 36, plans by Herman J. Jessor, 92 Liberty St., New York 13 twenty-story apartments for 4,768 families on 59-acre tract bounded by Shore Parkway, West Ave., Ocean Ave., Sheepshead Bay Rd and W. 6 St. $66,000,000.

▲ **O., Canton**—HOUSING—Donald W. Geitgey, Ivy Rd., 125 houses, 75-acre site, on State Rte. 43, 6 mi. north of here. $3,750,000. Work in fall.

▲ **O., Cincinnati**—OFFICE, etc.—20th Century Realty Co., Carew Tower, plans by Welton Becket & Assocs., 5657 Wilshire Blvd., Los Angeles, Calif., 15 story office, apartment, tower, air-conditioned, etc., 221-

(Continued on page 70)



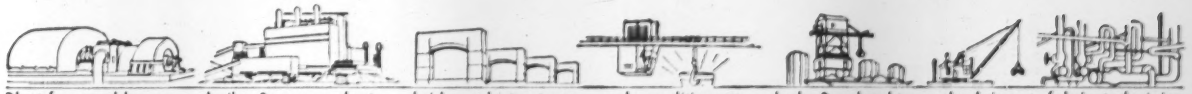
Five "turn-key" boiler plants for FORD

Five new Ford Motor Company factories will have Dravo-built steam generating and air compressor plants similar to this one in Sterling Township near Detroit. Three are in operation, the fourth and fifth are under way. First of these turn-key projects was built in 1955. Ford engineers specified design requirements . . . Dravo handled engineering-construction, procured equipment and erected the complete plant.

Dravo has built more than 80 power and steam generating plants for both industrial and central station use. The combination of pipe fabrication facilities and construction experience produces low cost plants that are economical to operate and maintain.

Your next construction project may benefit by making use of this teamwork. For information on this, or any of the products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

DRAVO
CORPORATION



Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

ENGINEERED HIGHWAYS REQUIRE →

WASHINGTON **Dens-o-meter**

THE KEY TO ACCURATE FIELD TESTS FOR MOISTURE DENSITY IN EMBANKMENT AND FOUNDATION SOILS.

Developed after two years research and experiment by Department of Highways, State of Washington. Opens up entirely new possibilities for foundation and earth work engineers and contractors who can now make accurate moisture-density and compaction tests.

- **in all large or small holes**
- **in all types soils and granular base materials**
- **in about 3 minutes after hole is dug**

Now for the first time, holes of any size from 0.000 cu. ft. to 0.500 cu. ft. can be measured with the same equipment. Holes up to 22 inches in depth can be measured—singly or in successive lifts.

The unit is light in weight, compact, very portable, easy and economical to operate and maintain.

Get full information from

Exclusive Sales Agents

CHARLES R. WATTS CO.
4121 SIXTH AVENUE NORTHWEST
SEATTLE 7, WASHINGTON

FOR SAFE AND SPEEDY HOISTING

Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel graphite-bronze, self lubricating sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service.

Our special service departments will help you with their recommendations. Write for our catalog or consult your equipment dealer who can supply you with MADESCO products.

MADESCO BLOCKS

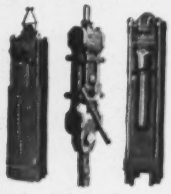
MADESCO TACKLE BLOCK CO.
EASTON, PA.

Engineered to Serve Your Special Service Needs

McKIERNAN-TERRY

WIDE-RANGE LINE OF

PILE HAMMERS AND EXTRACTORS



Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.

Write for free descriptive Bulletins.

Also builders of coal and ore bridges and unloaders, and specially designed machinery.

McKIERNAN-TERRY CORP.
32 Mercer Street, Dover, N. J.

LEFAX

TECHNICAL DATA BOOKS

POCKET SIZE • LOOSE LEAF

Printed on loose leaf, 6 hole, 6¾" x 4¼" bond paper, each book contains about 140 pages of technical data, condensed, accurate, essential, for engineer, technical worker, student, business man.

$1.25 each

Architecture	General Math	Phys. & Thermo. Data
Home Heating	Math Tables	Physics
Illumination	Metals	Electrician's Data
Trig-Log Tables	Metallurgy	Builder's Data
Gen'l Chemistry	Hydraulics	Lumber Data
Chemical Tables	Radio	Air Conditioning
Analytic Chem.	Television & FM	Building Constr.
Mech'l Drawing	Electricity, AC	Reinf. Concrete
Machine Design	Electricity, DC	Piping Data
Machinist's Data	AC Motors & Gen'trs.	Surveying
Mech. of Materials	Transformers,	Surveying Tables
Pwr. Trans. Mach.	Relays & Meters	Highway Eng'g.
Thermo. Tbls. & Charts	Welding Data	Conversion Tbls.

Write for FREE catalogs (2000 listings). See how helpful LEFAX can be to you. Send $1.25 book, or $6 for any five books to LEFAX PUBLISHERS, Dept. EN-87, Phila. 7, Pa.

(Continued from page 68)

car below grade parking, Victory Parkway site at Calvin Cliff. $5,000,000. Adrien Doss, c/o owner, Carew Tower, engr.

▲ **O., Cleveland**—SCHOOL—Fenn College, Euclid Ave. and 24th St., Zone 15, plans by Joseph Ceruti, 7113 Euclid Ave., Zone 3, conversion of old Ohio Motors Bldg. into classroom and laboratory space, $4,000,000, plan to take bids for work on bsmnt., 1st and 4th floors this fall with work on other two floors to be done at later date.

▲ **O., Poland**—HOMES—Frontier Land Co., Kenneth H. Mitchell, pres., Poland, 200-ranch-type homes in 81-acres bounded by U. S. Rte. 224, Clingan Rd. and Highland Ave. $4,000,000.

▲ **O., Toledo**—SCHOOL—Sisters of Mercy, affiliate with Province of Cincinnati of Sisters of Mercy, Fremont, plans by Robert J. Reiley, Paramount Blvd., catholic girls' high school, incl. 3 story main bldg., 3 story cafeteria, gymnasium-auditorium wing, 2 story science section, convent chapel, on 11-acre site at Anthony Wayne Trail and Brookford Dr. $2,200,000.

▲ **O., Zanesville**—HOSPITAL—Bethesda Hospital, Zanesville, hospital addn. $2,500,000. CD 8/2/45.

▲ **Okla., Tulsa**—HOSPITAL—Oklahoma Osteopathic Hospital, 9th and Jackson St., plans by J. R. Koberling, Court Arcade, hospital, 9 and Jackson Sts., $1,000,000. CD 3/7.

▲ **Tex., Corpus Christi**—SHOPPING CENTER—Ray E. Peterson 4206 Ayers St., Gulfgate Shopping Center, 13.7 acre site, SE side of Airline. $1,000,000.

▲ **Tex., Dallas**—SHOPPING CENTER—George F. Mixon, Developer and Geo. F. Mixon, Jr., 9007 Devonshire Dr., shopping center, 30-acre site, off Belt Line Rd. and Hillcrest. $4,000,000.

INDUSTRIAL BUILDINGS

▲ **Ariz., Phoenix**—GARAGES—I. F. Fogel Co., 1st and Jefferson Sts., 3 multi-story parking garage, capacity 1,000 cars, $1,500,000.

▲ **Calif., Los Angeles**—BREWERY—Theo Ham Brewing Co., 720 Payne Ave., St. Paul, Minn., brewery addns., remodeling. $4,000,000.

▲ **Calif., Lathrop**—PLANT—Best Fertilizer Co., 1459 3rd St., Oakland, ammonia plant on 40 acre site, $4,000,000.

▲ **Calif., Merced**—PLANT—Continental Can Co., Russ Bldg., San Francisco, metal can mfg. plant, 25 acre site near here. $3,500,000.

▲ **Calif., Oxnard**—FACTORY—Statham Laboratories, 12401 W. Olympic Blvd., Los Angeles, plans by Albert C. Martin, archt.-consult. engr., 333 Beaudry St., Los Angeles, brick, concrete floor, factory bldg., Dempsey Rd. and Hy. 101-A. $1,000,000.

▲ **Conn., Orange** — DISTRIBUTION CENTER — Western Electric Co., Inc., 195 Broadway, New York, N. Y., 1 story, 400x700 ft., 230,000 sq. ft., steel, masonry distribution center, Boston Post Rd. $2,500,000.

▲ **Ind., Fort Wayne**—FACTORY—Farnsworth Electronics Co., 3702 E. Pontiac St., 1 story, 160,000 sq. ft. floor-space, 400x400 ft., tilt-up concrete factory for making electronic products, air-conditioned, on 61 acre site, bounded by Wayne Trace, Moeller Rd. and Pennsylvania R.R. $3,000,000. Work to start in 1957.

▲ **O., Mason**—PLANT—Intl. Paper Co., c/o local branch, Dixie Term., Cincinnati, sheet paper plant to fabricate paper stock into cartons, Reading and Snyder Rds. $1,000,000. Constr. late 1957.

▲ **Pa., Hatboro**—PLANT, etc.—Fischer & Porter Co., Hatboro, 1,000,000 sq. ft. industrial plant and office bldg., Norwich Twp. $5,000,000.

▲ **Tex., Richmond-Rosenberg**—PLANT—Houston Lighting & Power Co., 1016 Walker St., 275,000 kw unit electric generating plant at Smithers Lake plant, 9 mi. south of Sugarland, Fort Bend Co. $12,500,000.

UNCLASSIFIED

▲ **Nebraska**—RURAL DISTRIBUTION LINES—Elkhorn Rural Public Power Dist., Battle Creek, distr. lines and sys. imprvs., Madison Co. $2,050,000. Nixon Eng Co., WOW Bldg., Omaha, consult. engr. CD 7/8/54.

▲ **New Jersey**—PARK—Bd. Freeholders Bergen Co. and Bergen Co. Park Comm., Administration Bldg., Hackensack, 1,100 acre county park with swimming pool, skating rink, athletic fields, administration bldgs. etc., in Ridgefield Park-South Teaneck area. $3,500,000.

▲ **Ohio**—NIKE INSTALLATIONS—U. S. Eng., Ohio River Div., P. O. Box 1159, Cincinnati, 4 nike installations within a 30-mile radius of Cincinnati, incl. rein.-con. pits, launching areas housing facilities. $4,000,000.

▲ **Oklahoma**—GENERATING UNIT AND TRANSMISSION LINE—Western Farmers Electric Co-operative, Anadarko, 44,000 k.w. steam generating unit, 217 mi. transmission line, Comanche. $11,700,000. CD 2/13/50.

▲ **Wash., Longview**—PORT FACILITIES—Port of Longview, port facilities, extend elevator pier, 120x200 ft. warehouse constr., etc. $1,350,000. J. P. Hart, 3536 E. 11 St., Tacoma, consult. engr. CD 11/16.

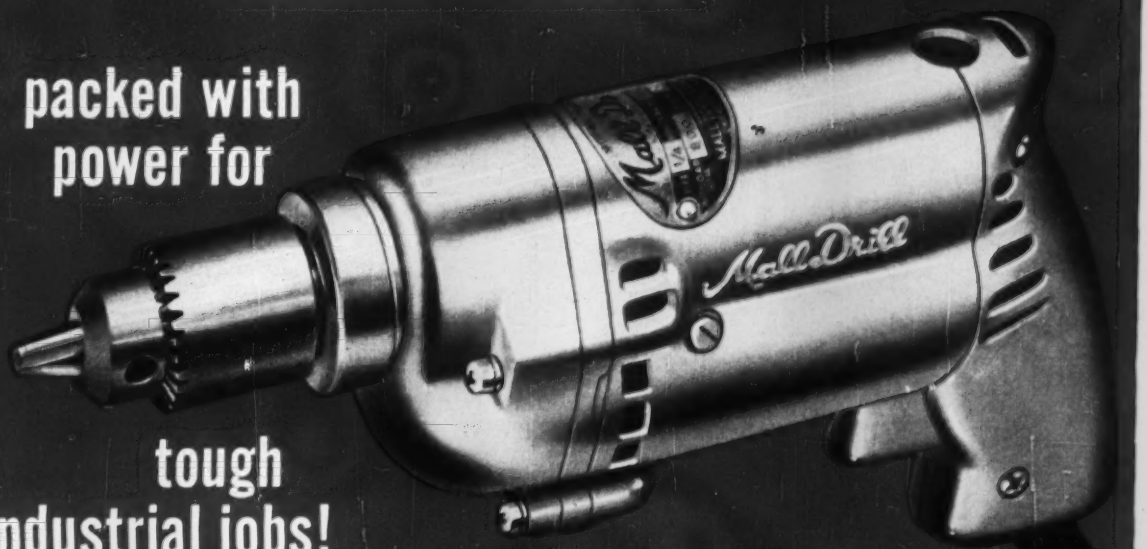
▲ **Que., Sherbrooke**—SUB-STATION—City, City Hall, 110,000 volt sub-station, north end of city. $1,000,000. Shawinigan Eng. Co. Ltd., 600 Dorchester St. W., Montreal, consult. engrs.

(Proposal Advertisement see pp. 83 to 85)

now, in industrial tools, too!

if it's Remington, it's right!

packed with power for tough industrial jobs!



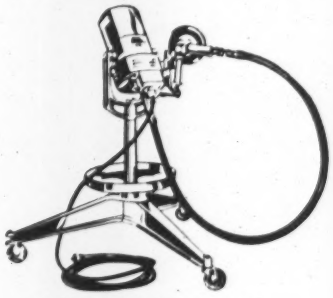
Model 145T. *Heavy Duty Electric Drill. Capacity, ¼" steel, ½" wood; AC-DC, 25 to 60 cycles; 115 volts, 220 available; geared key type chuck; 2350 rpm. free speed, 1300 rpm. load speed; 4 lbs. Comes with chuck and key, 10 ft. cord, plug and ground.*

Model 145T-S. *Same as above with following exceptions: 800 rpm. free speed, 450 rpm. load speed. $52.00* each.*

These 6 great features in our Model 145T Heavy Duty Drill make it right for you!

- **Built with extra torque for tough metals!**
- **Powerful motor for smooth, constant power!**
- **Lifetime sealed ball bearings!**
- **Brushes can be inspected and cleaned without dismantling housing!**
- **Large motor fan for cooler operation!**
- **Trigger switch locks for continuous operation; easy to use in either hand!**

**Prices and specifications subject to change without notice.*



Versatile Flexible Shaft Grinders.
¼ HP. to 3 HP. Capacity.

BUILT WITH EXTRA TORQUE

This compact, lightweight Remington drill by Mall was designed for rugged, steady work, for handling ease in tight spots, and for simple, economical maintenance. It is built with the same quality and precision that have made Remington—manufacturer of sporting firearms and ammunition—a famous name for 141 years.

In metal, plastics or wood, the heavy duty 145T Remington ¼-inch drill by Mall will always give you top performance because it is built with extra torque!

For full information on the complete Remington line of Mall industrial tools, see your supplier or just send the convenient coupon.

Remington Mall®

MALL TOOL COMPANY, Division of Remington Arms Company, Inc.
25000 S. Western Ave., Park Forest, Illinois · In Canada: Mall Tool Limited, 36 Queen Elizabeth Blvd., Toronto, Ont.

MALL TOOL COMPANY, Division of Remington Arms Company, Inc., Dept. H31A
25000 S. Western Ave., Park Forest, Illinois.

Please send FREE catalog on industrial tools.

NAME _____

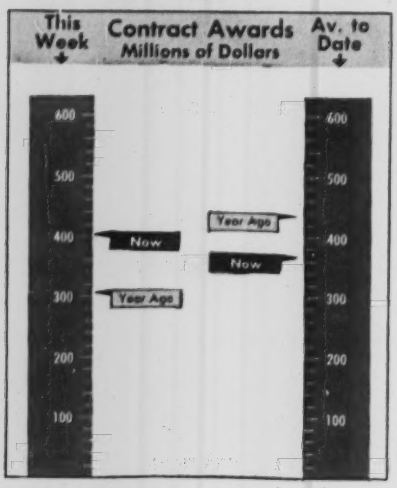
COMPANY _____

STREET _____

CITY _____ ZONE ____ STATE _____

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 31 wks 1957	Chge '56-'57 %
	millions		
Federal	$31.1	$1,687.4	+51
State and Municipal	163.7	4,492.2	+15
Total Public	194.8	6,179.6	+23
Total Private	206.2	5,256.0	−38
U. S. Total	$401.0	$11,435.6	−15
By Type of Work			
Waterworks	$5.6	$222.4	−1
Sewerage	6.7	341.3	−4
Bridges	15.2	449.2	+22
Highways	84.9	1,917.4	+31
Earthwork, Waterways	9.2	674.6	+42
Buildings:			
Public, Excl. Housg.	45.6	1,385.5	+14
Public Housing	10.1	423.0	+96
Private Housing	63.3	1,853.2	−46
Commercial	46.2	1,086.7	−4
Industrial	74.8	2,020.7	−43
Unclassified	39.4	1,061.6	−4
U. S. Total	$401.0	$11,435.6	−15

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

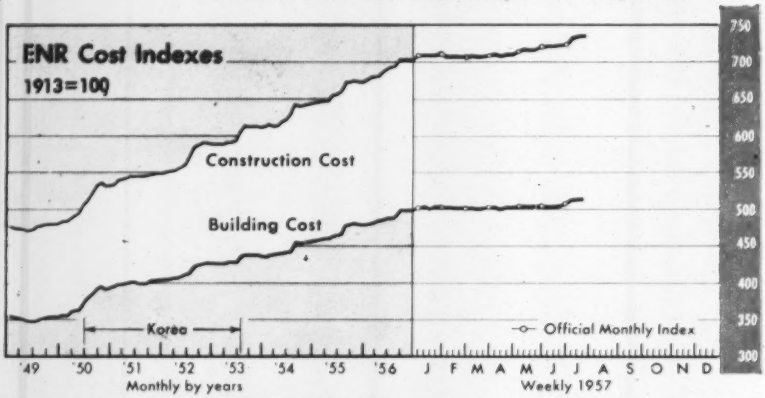
NEW CAPITAL FOR CONSTRUCTION

	Week of July 25	Cum. 30 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$69.1	$3,518.0	+31
State and Municipal:			
All Except Housing	123.2	3,128.5	+11
Housing	...	155.8	+268
Federal Loans	...	150.5	+92
Federal Aid	...	2,161.2	+102
Total Nonfederal	$192.3	$9,114.1	+36
Federal Appropriations:			
In U. S.	...	$413.8	−63
Outside U. S.	...	22.8	+43
Total New Capital	$192.3	$9,550.7	+22

Cost Indexes as of Now

ENR INDEXES (1913=100), 20-cities' average	Week of July 25 1957	% Change from June 24, 1957	July 26, 1956
Construction Cost	738.65	+2.0	+6.1
Building Cost	516.92	+2.0	+5.3

To convert above indexes to 1926=100: Divide Construction Cost by 2.080; Building Cost by 1.50
1949=100: Divide Construction Cost by 4.770; Building Cost by 3.5



BUILDING COSTS AND PRICE INDEXES

	Mar. (Mr) Apr. (A) May (M) June (Jn) July (Jl)	Percent Change from Sept. (S) Dec. (D) Jan. (J) Mar. (Mr) Apr. (A) May (M) June (Jn)	Year ago
Weighted Cost Indexes (1949=100)			
ENR Construction Cost	152 (Jl)	+0.4 (Jn)	+4.2
ENR Building Cost	144 (Jl)	+0.6 (Jn)	+3.7
Associated General Contractors	142 (Jn)	+1.3 (M)	+5.2
American Appraisal Co.*	136 (Jn)	+0.8 (M)	+4.7
Marshall & Stevens, Inc	141 (Mr)	+0.4 (D)	+4.1
Weighted Price Indexes ** **(1949=100)**			
E. H. Boeckh & Associates, Inc. Commercial & Factory	137 (M)	+0.6 (A)	+3.3
Smith, Hinchman & Grylls, Inc	144 (Jn)	0 (M)	+5.1
Contractor Price Indexes (1949=100)			
Aberthaw	146 (Mr)	+3.0 (S)	+12.1
Austin	136 (Jn)	+1.3 (Mr)	+5.6
Fruin-Colnon	134 (Jn)	0 (M)	+1.8
Fuller	130 (A)	+0.2 (J)	+4.0
Turner	141 (Jl)	+0.9 (A)	+6.3

* Adjusted for estimated productivity
** Includes overhead, profit; adjusted for estimated productivity

HIGHWAY BID PRICE INDEXES

	Second Quarter 1957	Percent Change from Previous quarter	Year ago
Quarterly, 1949=100			
California Division of Highways	140.0	−3.9	+4.3
Colorado Department of Highways	105.4	+22.0	+5.0
Idaho State Highway Department	139.0*	+41.9	+33.1
South Dakota State Highway Department	98.5	+13.1	−2.9
Texas Highway Department	120.6	+0.8	+5.5
Washington St. Highway Commission	108.2	+0.3	+4.8
U. S. Bureau Public Roads—Composite Mile	116.5	+0.1	+5.4

* Index shown is based on 1950=100

CONSTRUCTION MACHINERY PRICE INDEXES

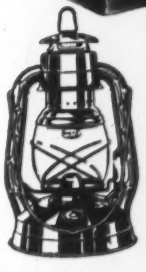
	June 1957	Percent Change from Last Month	Year ago
BLS Indexes of Manufacturer Prices, 1947-49=100			
All Types	157.6	0	+7.4
Power Cranes and Shovels	159.5	+0.1	+7.3
Tractors	169.3	0	+7.3
Scrapers and Graders	150.1	0	+6.5
Mixers and Pavers	142.6	0	+6.3
Machinery, Tractor Mounted	155.9	0	+9.4
Specialized Construction Machinery	144.6	0	+8.1
Portable Air Compressors	146.2	0	+9.8
Air Tools, Hand Held	150.0	0	0

Outshines them all

DIETZ Visi-flash TRADE-MARK HAZARD WARNING LIGHTS

"Brighter . . . tougher . . . low-cost . . . trouble free!" These are but a few of the enthusiastic quotes from contractors, municipal, county and state officials, utility and industrial users in commenting on new transistorized Dietz Visi-Flash Hazard Warning Lights.

- **The transistor circuit makes it shock-proof, uses minimum current, won't wear out . . . eliminates common maintenance problems.**
- **Optical lenses, longer dwell time, and "white" bulb make Visi-flash up to 40% brighter.**
- **First cost is 15% to 25% less than ordinary flashers.**



DIETZ LANTERNS The only complete line of construction warning lanterns. Six different models from which to choose, each designed for a specific job. Send coupon for catalog.

DIETZ TORCHES
Four types available. Sturdy, bright, reliable, longer burning. Leaktight, 20 gauge steel construction. Flat-bottom or weighted-bottom styles. Send coupon for catalog.

In actual field tests, made at 800 and 2,000 yards, Dietz Visi-flash proved the brightest, and most visible in all types of weather.

No wonder everyone is saying: "This is the hazard warning flasher we've been waiting for!"

You'll be saying the same thing when you use Dietz Visi-flash Hazard Warning Lights. 4 styles available. See your Dietz distributor, or use coupon for free catalog. Mail to R. E. DIETZ COMPANY, SYRACUSE, N. Y.

Go **DIETZ** *and you go Safely*

FREE HAZARD WARNING LIGHT CATALOG

R. E. DIETZ COMPANY
114 Leavenworth Ave.
SYRACUSE, N. Y.
Please send me catalog and price list.

Name..... Dept. .....
Company.....
Address.....
City..... Zone.....State.....

A part of the growing group of engineering subcontractors; the names of these men or their companies will never appear on a set of plans or a design. They are . . .

Photo by Arn Glantz

THE ANONYMOUS ENGINEERS—
A Big Business That's Getting Bigger

Marianne Stern
Staff Writer

Within the next two years, subcontracting may become as important—and as permanent—in the engineering field as it has been in construction.

Engineering service organizations, so-called "job shops," already have attained some respectability—and a great deal of work—detailing, designing and drafting for major industrial and engineering companies and government agencies.

Because their names seldom, if ever, appear on a set of plans, these anonymous engineers represent a virtually unknown element in the construction industry.

To a large extent, the noteworthy engineering service organization of today is a war-born baby that has been nurtured by the biggest peacetime boom in the nation's history.

Despite early reluctance by industry—and consultants—to use the "job shops," and later reluctance to admit using them, these engineering service organizations have grown into an industry that will do an estimated $75 million worth of business this year.

• **Manpower pools**—The shortage of engineers and technicians and rising costs have placed a premium on technical manpower. And, that in turn has sparked the success of the "job shop" because engineering service organizations are, in effect, technical manpower pools that offer design and drafting services for sale—sometimes at a lower cost than a company or a consultant would pay to do the job itself.

While they take a variety of organizational forms and go by many names, the common denominator of all engineering service organizations is that they are design and drafting subcontractors.

The engineering job shop today is employed by engineers, industrial firms and even government agencies for tasks ranging from tracing of floor plans to complicated power plant design, from structural steel detailing to production of technical manuals.

Job shops operate as an extension of the client's own forces; they adopt the standard procedures and methods of the client's own drafting room, and they take elaborate steps to maintain the character of the client's work.

• **Why job shops are booming**—ENGINEERING NEWS-RECORD's survey of engineering service organizations shows why job shops are gaining a strong foothold. They can be used to good advantage when:

- A consulting engineer or a company is faced with a temporary overload.
- A consultant must get a top priority job completed in a rush.
- A firm with small drafting room facilities suddenly gets a volume of work that calls for more engineers—and more space.
- One-shot highly specialized talent is needed and a consultant or a company cannot afford or does not want to develop such a complement.
- Technical personnel are needed for work "on location" in geographical areas that lack qualified manpower.
- A fabricator gets a complicated structural steel detailing job which his own staff is not prepared to handle.
- A consultant or company does not want the personnel problems involved in employment of temporary help.

• **How many—and where**—Unlike some other fields, the engineering service industry has no census, no real count of the number of firms now existing. But, industry sources agree there are literally hundreds of subcontracting firms for engineering services throughout the nation. A relative handful employ a staff of more than 500 people; approximately 20 to 30 firms employ staffs of 100 to 500. Most job shops, however, employ less than 20 people.

Large, heavily industrialized cities naturally provide the biggest demand for engineering service organizations, which cluster in such areas as Chicago, Detroit (mostly for the automotive industry), Cleveland and San Francisco. New York has a particularly heavy concentration of job shops. These range from the big organizations that handle every type of engineering design to countless "bedroom draftsmen" whose offices are in their homes.

• **Four basic types**—There are many

variations on the engineering subcontractor theme, each tailored to fit a basic need. But, four types are most prevalent:

- The large service organization that works in all fields of engineering and undertakes everything from elementary tracing to missile guidance and control system design.
- The medium-size organization that is more specialized, more apt to concentrate on specific types of engineering.
- The hundreds of small drafting firms in the construction field (structural steel detailers are most prevalent).
- The engineering service organization operated in conjunction with or as an affiliate of a professional engineering firm.

To see how these firms look close up, here are four types of representative New York "job shops:"

• **A giant**—Typical of the giant engineering service organizations is the 950 man Consultants & Designers, Inc., a New York firm with offices and facilities throughout the U. S. and Canada.

C&D contracts come from virtually every field of engineering, including aircraft, electronics, production, industrial, drafting, marine, special machinery and test equipment—and even for technical publications.

The industrial field represents between 30% and 40% of C&D's workload. The firm has billed more than 2 million manhours of design and drafting time in the heavy construction field. This has included work on oil refineries, power plants, industrial and commercial buildings, schools, hospitals, highways, bridges and airports. The firm has handled everything from site planning to equipment specifications for projects both in the U. S. and overseas.

• **Take your pick**—Operational procedure for a particular job is governed by the client's needs. Personnel are available by the day, week, month, year—or for the duration of the project, and for any size job.

Approximately 60% of Consultants & Designers' staff is employed in home and field offices. The remainder work on the client's premises.

C&D assumes responsibility for the "technical accuracy" of all information that appears on its drawings. But, C&D isn't responsible if the client supplies incorrect data. Initial and final responsibility for "overall correctness" of a project rests with the client, i.e., the consulting engineer or owner.

Cost of a project is estimated by the number of manhours involved. Work primarily is quoted on a cost-plus-fixed-fee basis. The fee is a composite of the draftsman or designer's salary, the subcontractor's overhead, plus profit.

Billing on a subcontract design job may run as high as several million dollars or as low as $10,000. On a representative project, the fee probably would be about $750,000. It might involve employment of 100 men for a year.

Since its founding in 1950, C&D has grown into an organization whose billings exceed $6 million a year. Here's how C&D's President Charles E. Zimmerman explains its success:

"Companies realize more and more that there is too much expense involved in hiring and firing temporary technical personnel, assuming that such personnel are available. We provide manpower and guarantee the ability of such men to meet the job classifications for which they are hired. There is no hit or miss proposition involved.

"When engineers or companies engage our services, it costs them the man's wages plus 35% to 40%; but, if they were to hire their own men, it might cost them wages plus 100% to 150%. Fringe benefits, severance pay and personnel procedures of a large company can be expensive when applied to temporary help."

As in most other job shops, personnel at C&D are paid on an hourly basis. With the exception of a skeleton staff, employment is temporary and is dependent upon the flow of work. Fringe benefits are less than those offered in other industries. But, there are compensating factors. Job shops pay their employees slightly higher wages than their counterparts in industry and give them an opportunity to handle diversified work.

• **Medium-size firms**—The second type of job shop is a medium-size organization that tends to be more specialized than the biggest firms and differs somewhat in its method of operation. Parco Company, Inc., of New York, is a good example.

In its early years, Parco concentrated on subcontract design work in the petroleum and chemical fields. Later, it branched out into power and industrial work and worked in the development of nuclear reactors and guided missiles. Because of the degree of specialization, 90% of Parco's staff are graduate engineers.

Unlike the general engineering service company, Parco does not farm men out to the principal. The only exception made occurs when Parco is able to send along its own supervisory personnel to assume direct responsibility over its own men.

Technical direction of all assignments is handled jointly by Parco and the principal's supervisor.

As the job progresses, Parco gives its client a weekly report detailing all time charged to various drawings and assignments. (A final estimate of the remaining cost and manhours generally can be determined when the job is 25% complete.) A typewritten diary also is maintained and sent to the principal's engineers each working day.

At the start of a large job, Parco, with the principal's approval, develops a manual of design and drafting procedure which guides the designer or draftsman and thus avoids inconsistency and waste of time.

As in other job shops, only a nucleus of supervisors and key personnel are retained by Parco on a permanent basis.

• **Steel detailers**—Outstanding among the small organizations that service the construction industry are the structural steel detailers. These independent drafting firms are employed by fabricators to develop the engineers' design drawings in greater detail for use by the shop and erection forces. Their work is so specialized that few of the larger service companies are willing to touch it.

Steel detailing firms are among the oldest of the engineering service organizations. Some of the earliest date back to the 1920s. For many years, they were treated as stepchildren by the industry, and received only minimal recognition. But following World War II, when the volume of detailing work surged upwards, large fabricators found their own drafting staffs inadequate. Time was of the essence when a week's delay in the drafting room might mean a month's delay in the shop. Consequently, independent detailers acquired the overflow. One major steel company now assigns jobs to more than 25 different detailing outfits in all parts of the country.

Not only were the established detailing companies flooded with work, but a host of new ones opened up in an attempt to cash in on the boom. Many of them passed out of the picture in due time, but others learned from their mistakes and established themselves. The total number within the New York area is estimated to have more than doubled during the past decade. The majority of these engineering service organizations range in size from two to 20 men.

Edelsack and Zarin, a typical New

. . . The anonymous engineers—fast growing business

York detailing firm, like many of its contemporaries, was organized shortly after the war. Originally begun as a two man office, today it comprises two employers and six employees. The partners are graduate engineers, the personnel, experienced draftsmen.

E&Z handles a variety of structural detailing, including that for industrial buildings, churches, schools and hospitals. It obtains work from about 15 shops in the greater New York and New Jersey area. Approximately 20 jobs are apt to be under way in the office at one time and there have been as many as 32. They have ranged in price from $300 to $30,000. Two or three are likely to be major projects and the remainder are small jobs.

Steel detailing is a highly competitive field. The fee for a job is estimated in advance, and is usually entered as a competitive bid on a lump sum or tonnage basis. The figure is arrived at by attempting to predict the manhours of work that will be needed. A few firms determine cost by the number of drawings estimated to be required.

"Estimating makes or breaks many a firm," remarked Dave Zarin. "For this reason we pick our work very carefully, and try to find the right jobs to suit the capabilities of our staff."

Unlike other service organizations, most detailing firms offer permanent employment. But employees are still paid on an hourly basis, and fringe benefits are scarce. The hourly wage in New York City for a detailer with some experience runs from $2.00 to $5.00 an hour. (It is slightly less in most other cities.)

The biggest problem that steel detailing firms must contend with, however, is not that of obtaining work, but of hiring and retaining personnel. The shortage of experienced detailers is acute.

The Steel Detailers Institute of New York, currently is financing a training program to induce young men to enter the field.

• **Half breed**—Several professional engineering firms combine their own practice with that of an engineering service company. A few incorporate engineer-activities of their consulting firms. Others have opened separate corporations with which they can serve both their own engineering force and that of other clients.

Devenco Inc., N. Y., which is a wholly owned affiliate of Theodore J. Kauffeld, consulting engineer, is one of the major firms of this type. It is an engineering service with licensed professional engineers as supervisory personnel. Devenco currently employs about 500 engineers and technicians.

Since its incorporation in 1944, the firm has been engaged as both prime and subcontractor on numerous projects. About 50% of the work is done in the nature of a service organization, the other 50% as a consulting engineering firm, according to Mr. Kauffeld.

At the other end of the scale is the professional engineering firm that handles both primary design and/or detailing. Such a firm is that of Weinberger, Frieman, Liechtman, and Quinn. All of the partners, and eight of the 35 employees are professional engineers.

This organization undertakes both design and detailing of reinforced concrete or structural steel.

It accepts primary engineering design jobs from an owner or architect, assuming full responsibility as professional engineers. It acts as subcontractor for the fabricator who wants his shop drawings prepared. And on some subjects it does both the primary structural steel (or reinforced concrete) design and detailing.

"In the latter case, we save an owner time and money because 1) the time and expense of sending detail drawings back and forth between the design engineer and the detailing organization for approval is avoided; and 2) changes in design can be readily made, without causing complications for the detailer. There is no lost motion this way," said Mr. Quinn.

• **In time of need**—Prior to World War II, engineering service organizations had little appeal for consultants or companies. Then came the great increase in defense production and construction. Industrial and engineering firms suddenly found themselves overloaded with work and badly in need of skilled technical help.

"Job shops" sprang up to fill the temporary need. Large manpower pools were created for one particular job (hence the term "job shop"), then frequently disbanded until another large project developed. But a pattern was set for the unprecedented construction and expansion boom that followed the war.

Many engineering job shops knocked on industry's door with the claim that they could handle certain types of design and drafting work better, cheaper and faster.

Several consulting engineering firms began to use the job shops to complement their own drafting rooms. Government used them for defense work and industry—particularly large companies—added to the job shops' work load.

• **Mixed reaction**—Industry's reaction to engineering service organizations is mixed. There is a general reluctance on the part of many companies that employ engineering services to admit it openly. This relatively new business relationship has not yet received public sanction, and still arouses disapproval in several quarters.

In this, as in every young and unorganized industry, unscrupulous and incompetent firms spring up to take advantage of a profitable situation—much to the consternation of reliable engineering service companies trying to establish a reputation.

Organizations, hard pressed for temporary technical help, have sometimes been taken in by profiteers who charge outrageous fees for temporary manpower. Also properly experienced personnel are not always provided.

Pirating of personnel is a source of ill-will among service companies themselves. Job shops that are out to make a quick profit, without regard to permanency or reputation, are the prime offenders.

In an effort to combat these evils, reputable engineering service companies are attempting to band together.

The Steel Detailers Institute which comprises 35 firms and four fabricating shops in the New York, New Jersey area, was organized 2½ years ago. "The institute enables members to iron out mutual problems; it assists in promoting more amicable relations between fabricator and detailer; and gives us a voice in industry," says Harry L. Vogel, an official of the institute.

For the larger companies, Jack Parker of Parco is currently attempting to organize a designers and draftsmen's council, an industry agency that could set up standards and eventually regulate practices.

Despite the aforementioned problems, a good number of engineering and industrial firms consider the outside service company to be a desirable permanent complement to their own drafting room staff. They have found through experience, that for certain assignments, service companies can operate faster and more economically than their own staff. This condition is attributable, not to an inadequacy on the part of the latter, but to the peculiar makeup of the former.

Originally created to fill a temporary need, engineering service organizations appear to be rapidly carving a permanent niche for themselves in the nation's economy.

No matter where your job is...

you're close to Travelers service

You're never far from service when you have your Workmen's Compensation and Public Liability insurance with The Travelers. And it's service that works two ways . . .

251 claim service locations all across the country give you quick, on-the-spot attention should an accident occur. The Travelers takes the burden of suits and settlements off your shoulders—leaves you to push on with your project.

109 engineering and loss control locations are staffed with safety experts who can give you at-the-site inspection no matter where you're working. The Travelers safety engineering staff was the first—and is one of the largest—in the world. And The Travelers has spent more than $100 million to prevent accidents and fires.

Service like this is just one of the "extras" that are yours when you insure with The Travelers. See your local Travelers agent or broker for full details.

• • •

The Travelers complete contractors' service also includes: *Bond Service* with speed and know-how and *Equipment Floaters* and *Builders' Risk* insurance serviced by a nation-wide claim organization that can give you prompt attention anywhere.

THE TRAVELERS

INSURANCE COMPANIES, HARTFORD 15, CONNECTICUT

All forms of business and personal insurance including
Life • Accident • Group • Fire • Marine • Automobile • Casualty • Bonds

Estimate of Cost Doubled On Florida Interstate Road

The total cost of the interstate highway system in Florida over the 13 year period prescribed in federal legislation will be more than double the amount estimated in 1954, the Florida State Road Commission reported last week.

The new estimate totals $935.2 million. About $115 million of the increase is accounted for in provision of new road in Pensacola, a new causeway between Miami and Miami Beach, an extension in Miami and a new bridge over Tampa Bay. Another $102 million is for engineering, preliminary engineering work, utility adjustments and other items not included in the estimates made in 1954. In addition, right-of-way costs have gone up from the 1954 estimate of $58 million to a present figure of $214 million, because the 1954 study did not take into consideration limited access on many miles of the system.

The 1957 state legislature required that the State Road Department pay the cost of utility readjustments—an item that will run to more than $6 million. Another $46 million is added because original estimates were based on four lanes of divided highways while more recent forecasts show the need for six lanes in some areas. Estimated cost of structures rose from $124 million in 1954 to $281 million as of now.

Port Improvements Slated For Detroit's Waterfront

Completion of a modern West Side Marine Terminal in time—local backers hope—to lure a generous slice of St. Lawrence Seaway business to Detroit has been promised.

The Port of Detroit Commission retained Harley, Ellton & Day, Inc., to conduct a survey and prepare preliminary engineering and architectural plans by Sept. 1. The County Board of Supervisors then will be asked to call a special county election to coincide with Detroit's Nov. 5 general election. At that time, and with the supervisors' approval of port plans, a proposal for a bond issue to cover the terminal's cost would be placed on the ballot. The cost is estimated at from $2 to $3 million.

The terminal will be designed to provide speedy loading and unloading facilities for general cargo ships. It is predicted that it will be completed in time for the opening of the Seaway in 1959.

Leonard P. Reaume Co., real estate appraisers, have been hired to estimate the value of land needed for the terminal.

Skyscraper Planned

New office building will penetrate existing hotel

A 22 story office building, to be built on an L-shaped plot on Madison Ave. in New York City, will be joined at the second and third floor levels to the existing Hotel Pierre. About 60 horizontal feet of the 2nd and 3rd floor walls of the Pierre will be removed, and by substitution of two large trusses for columns, the main ballroom of the Pierre will be extended into the office building, to double the capacity of the ballroom to 1,000 persons.

James Ruderman was structural engineer, and Marx, Flint & Schonne, Chicago architects, were consultants to the Hotel Pierre.

The office building will contain about 450,000 sq ft of rentable floor space and will have a 150 car garage on four levels extending from the sub-basement to the mezzanine.

The exterior of the building will be faced with blue-gray porcelain-enameled aluminum panels, accentuated by aluminum mullions. The aluminum panels will contain both the spandrel and window frames for fast erection. All windows will be vertically pivoted so they can be cleaned from the inside.

The building corners will be lined with limestone, extending about 3 ft in each direction.

Air conditioning will be of the individual controlled peripheral type. Fluorescent lighting will be recessed in hung acoustical ceilings.

Emery Roth & Sons are architects for the office building. Both the office building and the Hotel Pierre are owned by subsidiaries of Getty Oil Co.

Five Year Plan

Columbus, Ohio, studies $185 million improvement

The Columbus, Ohio, Planning Commission is studying a five year, $185 million public works program.

The five year program calls for expenditure of $140.7 million not previously obligated, according to M. D. Portman, the city's budget director.

The timetable for the public works expenditures is tentatively set up this way: $44.6 million in 1957; $52 million in 1958; $34 million in 1959; $38.6 million in 1960; $12.6 million in 1961 and $3.4 million in 1962.

Included in the plans are limited access streets for the city expressway system; 11 new firehouses; a safety building addition; expansion of police and fire communications; a new wing at the workhouse; off-street parking facilities; modernization of the city's traffic signal system; a new Central Market building; a new Port of Columbus terminal building; expansion of water and sewerage systems; additional parks and an accelerated slum clearance program.

The program would be financed by $2.2 million from the city's general fund; $16.8 million from publicly voted bond issues; $1.6 million from motor fuel taxes; $54.6 million from the state and federal governments; $5.9 million from council-voted city obligation bonds; $13.7 million from assessments levied against property owners who benefit from some of the facilities; and $30.1 million from revenue bonds.

State Claims Builders Owe $5 Million in Taxes

Contractors on Pennsylvania construction projects may have to dig deeper into their pockets to pay sales taxes they underpaid—or failed to pay—earlier. The state says the total could reach $5 million.

Auditors and investigators now are checking to see if the 3% sales tax has been paid on building materials and equipment which contractors bought outside the state. Such purchases are subject to the "use tax" provision of the state's sales tax levy.

Preliminary investigations indicate substantial underpayments, according to Gerald A. Gleeson, revenue secretary. Some nonpayment of the tax may have resulted from a misunderstanding, Mr. Gleason said.

The probe resulted from complaints by border area supply firms that out-of-state competitors quote "tax exempt" prices to get contractors' business.

TEAMMMMED TO OUTPERFORM

IN EVERY AUSTIN-WESTERN POWER GRADER

Power in the front drivers makes it safe to work along the top of a steep bank.

The teamwork of All-Wheel Drive and All-Wheel Steer makes the grader as sure footed as a mule.

Working upgrade on hairpin switchbacks is easy for the A-W grader.

All-Wheel Drive, All-Wheel Steer work together . . . doing things impossible for ordinary graders

Graders with rear drive only have to push the lazy, dead weight of the front end, which requires extra power and thus lowers the operating efficiency. Put power on the front wheels and you get *working* weight—not *dead* weight. Then all weight is on driving wheels, contributing 100 percent to traction.

All-Wheel Steer makes Austin-Western graders twice as maneuverable as those with front steer only; steering that lets you "swing that rear-end" for handling every job with maximum efficiency.

All-Wheel Drive for maximum mobility and 30 percent more Power-at-the-Blade—power that is made still more effective by Torque Converter drive. All-Wheel Steer for extreme maneuverability. Put them together and you have teamwork that keeps Austin-Western Power Graders working where other graders fail. Austin-Western Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Aurora, Illinois.

Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes

BALDWIN BLH LIMA-HAMILTON

AUSTIN-WESTERN WORKS

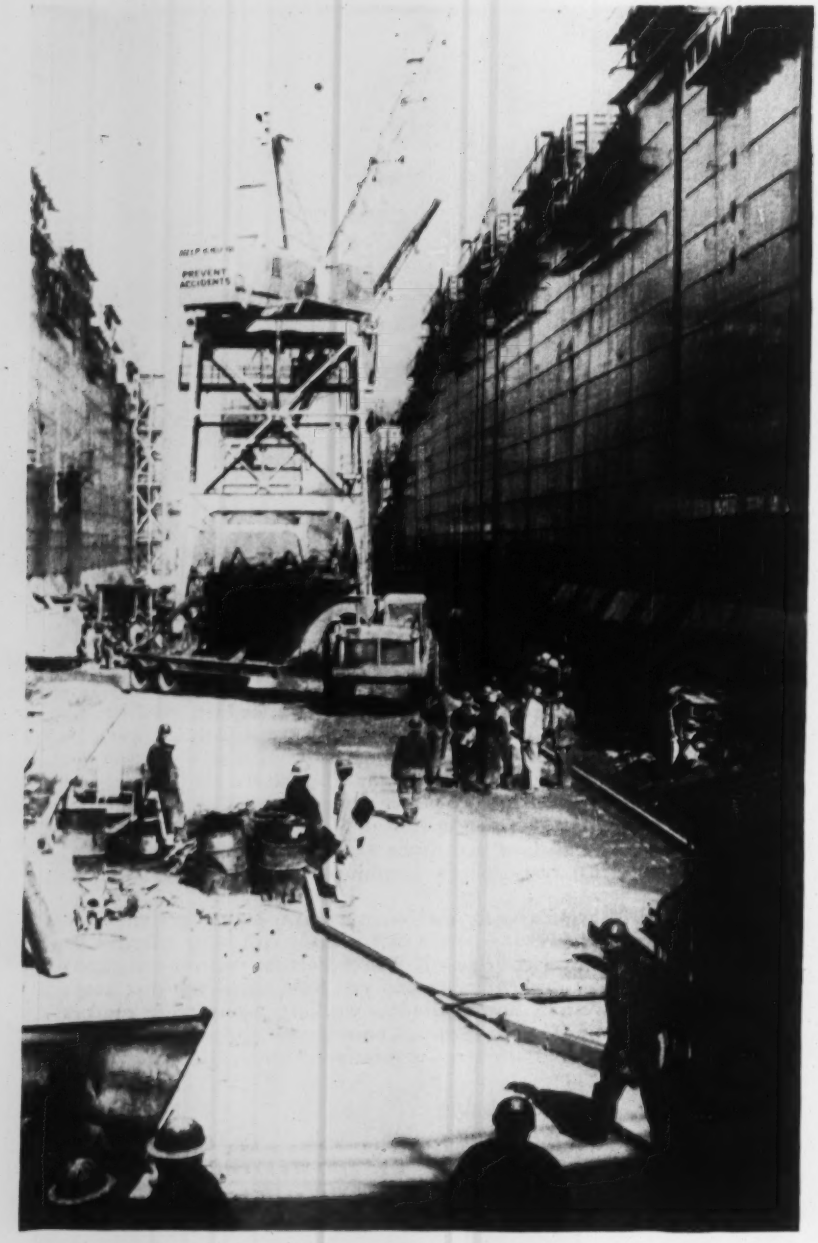
BALDWIN-LIMA-HAMILTON

Construction Equipment Division

OTHER DIVISIONS: Eddystone • Lima • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Standard Steel Works • Madsen • Pelton

Labor Helps Build Safety Record

Teamwork and sign work on the St. Lawrence Seaway's Grasse River Lock are cutting down the project's accident toll



CONSTRUCTION of the $27 million Grasse River Lock, on which safety has been a primary concern, is now ahead of schedule. Most of cement will have been poured for the big lock construction project by Sept. 1.

A safety record considered unique in heavy construction is being chalked up on the St. Lawrence Seaway by organized labor, a construction firm and an insurer.

Project is the $27 million Grasse River Lock, one of the two locks required to allow navigation to pass the Barnhart Island Powerhouse and Long Sault Dam. Accident frequency record on the job is five times better than the average rate for all industries and nine times better than the average for the construction industry.

Result—coupled with the fact that the project is well ahead of schedule—is "tangible evidence of the contributions labor can make," says safety-minded Lou Perini, president of Perini Corp., sponsoring contractor on the project.

Reasons for the record are numerous, but perhaps the clue to the most significant factor—Perini's emphasis on teamwork and on the welfare of the workers—is found on the rear of the cabs of the two towering gantry cranes used on the project. Each bears a safety message visible for hundreds of yards: "Your Safety Is First With Us Always" and "Help Us Help You Prevent Accidents."

• **Techniques**—How was the record accomplished?

Months before work commenced, Perini officials held pre-construction safety conferences with representatives of local unions and Employers Mutuals of Wausau, carrier of 90% of the workmen's compensation insurance on the Seaway. Object was to arrive at methods and techniques of operation that would keep accidents to a minimum, build safety into every job, and instill safety consciousness in the minds of all the workers.

Among the steps that have been taken are these:

• All new crews are given safety indoctrination lectures appealing to the individual's family responsibility, his pocketbook and other psychological factors. And assignment of individuals to jobs is given particular attention—those with a tendency to epilepsy, for example, are given jobs at ground level.

• Safety policing is done by a watchdog committee of the eight union stewards, who meet once a week with safety representatives of Perini and Employers Mutuals. Stewards see that safety rules are enforced and from time

to time recommend new safety techniques and improvements. They recently asked that a strong safety message be put on each pay check. So far, says project manager R. K. Ames, the unions, in their efforts to promote safety, have gone far beyond what is normally expected or required.

- Catwalks with handrails have been attached to the sides of concrete forms where men are working at great heights.
- Wooden bars bearing the safety slogan: "Be Alert—Stay Alive" have been placed below the bottom frames of the gantry cranes to keep men from ducking under them.
- Double ladders have been introduced to discourage men from climbing around each other on single ladders.

• **Results**—Net result is that there has been no fatality on the Grasse River Lock. During 1956-57, only 10 lost time accidents have occurred in 1.6 million manhours. Out of 174,180 eight hour working days, with 1,200 men working three shifts, lost time accidents have resulted in only 369 man days lost. Since Sept. 25, there has been just one disabling accident. How does this stack up against other jobs? Here's one comparison: A total of 1,544 men died as the result of on-the-job accidents during the construction of the Empire State Building, San Francisco-Oakland Bay Bridge, Panama Canal, Hoover Dam, Colorado River Aqueduct and Grand Coulee Dam—an average of nearly 260 fatalities per project.

As a tribute to the safety success achieved on the Grasse River Lock, for which most of the concrete will have been poured by Sept. 1, Lou Perini recently was awarded the National Safety Council's Honor Award and the Employers Mutuals top award for safety. At that time, one construction safety specialist remarked: "It all goes to show that when the man at the top wants safety, he gets it."

Building Trades Balk

Jurisdictional issue raised in New York State merger

The jurisdictional conflict between AFL-CIO building trades and industrial unions last week threatened to stall the progress of a labor merger at the state level in New York.

Meeting in Buffalo for its 94th Annual Convention, the New York State Federation of Labor, through a series of last-minute compromises, restored a semblance of labor unity, and the building trades within the state approved the continuation of merger negotiations with the CIO on this condition: The merger committee "shall under no circumstances recommend or approve a merger agreement between the two state bodies or a constitution of a merged body that does not clearly and unmistakably recognize the full jurisdictional rights of the building and construction craft unions and all other crafts and trades of the State of New York."

Ever since the AFL-CIO merger on the national level, the jurisdictional issue—which involves the economic problem of job opportunities for building tradesmen and contractors—has been a major stumbling block to labor unity at state and local levels.

Principal critics of the mergers have been the building trades, which have pushed consistently for a clear-cut and workable formula that will protect their respective jurisdictions against encroachments by CIO industrial unions. One manifestation of the perennial problem that affects contractors as well as construction workers is the use of clauses in industrial union labor contracts restricting the right of industrial plants to use contractors and outside labor for in-plant construction, alteration, repair and maintenance work.

Present plan for settling jurisdictional disputes calls for three roving AFL-CIO teams to investigate and make nonbinding spot decisions as disputes arise (ENR July 11, p. 145). This procedure, however, has not produced a final solution to the problem.

Counting the recently formed Washington State Labor Council, AFL-CIO, local mergers have now been completed in 25 states. Balance of the states—which comprise most of the heavy industrial ones—are given until Dec. 5 to complete their mergers.

MESSAGE ON CAB of gantry crane reflects tenor of project's safety program as contractor Lou Perini (center) confers with members of the Grasse River Lock safety team.

AFL-CIO and UCW Clash On a Barkley Dam Project

Efforts of AFL-CIO building tradesmen to obtain work on the $3.5 million cofferdam at the Barkley Dam site near Kuttawa, Ky., have been slowed down by a state court order temporarily forbidding interference with the project's construction.

The temporary injunction is an outgrowth of a jurisdictional clash between the Paducah, Ky., AFL-CIO building trades and the United Construction Workers, an affiliate of the United Mine Workers. The order prohibits "illegal" picketing.

The project has been the scene of inter-union strife between the AFL-CIO and UCW groups since work on the cofferdam started June 17. Contractor is a UCW employer, Wasson Coal Mining Corp. of Boonville, Ind., which has placed 90 UCW workers on the Barkley job. The Paducah Building and Construction Trades Council, AFL-CIO, claimed jurisdiction at the project and posted pickets to protest UCW encroachment.

Construing the court order as directed at mass picketing and disturbances only, an official of the Paducah council has indicated picketing will be continued.

(Labor continued on page 82)

Union Restrictions

Plasterer and bricklayer question featherbedding

Union limitations on use of new construction tools and machinery were recently condemned by some of the building trades' top brass, who viewed them as an inducement to greater use of substitute materials and as a threat to the very existence of protesting crafts.

The limitations—whether in the form of restrictions on use of tools or of premium pay for their operation—are forms of featherbedding, which the Chamber of Commerce of the United States says "should be banned by federal and state law." The term, which originated when a railroad unionist was accused of wanting a feather bed because he complained about corn shuck mattresses his company put in cabooses for railroad workers, is defined by the Chamber of Commerce as "practices which require employment of unnecessary labor or payment for work not performed or which reduce or limit labor production or the use of labor-saving methods or equipment."

When the plasterers union met in Long Beach, Calif., for its 37th convention, its president, John E. Rooney, said that plastering machines, originally resisted by the union, had been a big boon. "When we went to Chicago to look at plastering machines," he observed, "I thought we were through. But, you know, we gained more work with those machines because we got into a different field, especially on fireproofing. These machines were doing acres of it. And we have created through our promotion programs in the last couple of years $7 million worth of plastering, where otherwise it would have been dry wall, and the same thing applies to fireproofing. We have changed that from a substitute into $35 million worth of work for our members. So don't get frightened of machines."

Similar advice was handed the delegates by William R. Conners, first vice president of the bricklayers union. "Another matter, which, in my opinion, we should be concerned over," Mr. Conners declared, "is the use of power tools and premium pay for the operation of them. It is my personal opinion that a careful study should be instituted to determine the potential results of placing heavy premiums on the use of power tools either by means of an additional wage rate or the limitation of work to be performed with these tools. Premiums placed on the use of certain materials or tools have done nothing other than place a weapon in the hands of those who would seek to eliminate a given trade by instituting and promoting the use of substitute materials and having this particular trade replaced by one which has a lower wage rate."

British Columbia Boosts Apprenticeship Program

To meet the growing needs of its construction industry, the Canadian Province of British Columbia is launching a $4 million program to double the number of apprentices now in training.

Government, industry and labor have evolved a three-way plan of selection, training and placement to induce young men to enter apprenticeship and to encourage management to hire them. There are now 2,500 apprentices enrolled in the province.

Provincial Labor Minister Lyle Wicks has announced that the program will include construction of a big $1.5 million vocational training school that is expected to accommodate training needs of the lower mainland for the next 25 years.

The provincial government already has allocated $385,000 to start the program and the federal government will provide a similar amount this year. According to Mr. Wicks, the provincial allotment is 400% more than last year's.

A new vocational school also will be built in Prince George and the one at Nanaimo on Vancouver Island will be expanded. Training will be free and will stress training in building trades.

Labor Briefs . . .

• **Hoffa a candidate**—James R. Hoffa, central states' teamster chief recently acquitted of bribery charges, last week announced he will run for the teamsters' presidency at the union's Sept. 30 convention. His platform: More democracy within the union, less power in the hands of the president.

• **Burt boycott**—For the second time in eight months, the sheet metal workers' boycott against Burt Manufacturing Co. has hit a University of Ohio project. This time, university subcontractor Tri-State Roofing Co. has canceled an order for Burt ventilators because of the labor problems involved.

• **Fund disclosure**—Gov. Goodwin Knight of California has signed a bill, effective Sept. 11, setting up state regulation of employee health, welfare and pension plans. Bill covers plans established under union contract.

OFFICIAL PROPOSALS

Bids: August 29, 1957

Construction of Water Main Hamburg and Orchard Park, N. Y.

Notice is hereby given that sealed bids will be received in accordance with the law by the Erie County Water Authority until ten o'clock A.M. Daylight Saving Time on the twenty-ninth day of August, 1957 at the office of the Authority, 338 Ellicott Square Building, Buffalo 3, New York, for furnishing materials and performing the labor for constructing a thirty-six (36") inch diameter water transmission main in the Towns of Hamburg and Orchard Park, Erie County, New York, all in accordance with plans and specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York.

Copies of the plans and specifications may be obtained either from the Erie County Water Authority or from the Consulting Engineers upon deposit of Twenty-Five ($25.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within ten (10) days after the date on which bids are received or else the entire deposit will be forfeited.

The work to be done includes all materials and labor, tools, plant and equipment necessary for constructing, installing, testing and completing, ready for operation, approximately thirty-two thousand (32,000') feet of thirty-six (36") inch diameter water transmission main with connections to existing mains, valves, air relief and blow-off facilities, manholes and other accessories and appurtenances.

Each proposal must be accompanied by a certified check payable to the Erie County Water Authority or a bid bond to the favor of the Authority from a reliable surety company authorized to do business in the State of New York and satisfactory to the Authority, in amount equal to ten (10%) percent of the proposal. The certified check will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue, in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right is reserved to accept any bid or to reject any or all of them.

ERIE COUNTY WATER AUTHORITY
By: WILLIAM J. CARNEY
Secretary

Buck, Seifert and Jost
Consulting Engineers

Dated: July 30th, 1957

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4945) will be received at Kanab, Utah, until September 5, 1957, for furnishing labor and materials for Residences for Page, Arizona, Colorado River Storage Project. Location near Lees Ferry, Arizona. Principal items are constructing 200 three-bedroom residences. Completion time 340 days. For particulars, address Bureau of Reclamation, Post Office Box 267, Kanab, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

(Continued on the following page)

OFFICIAL PROPOSALS

Bids: August 8, 1957

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, Public Buildings Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 8th day of August, 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1; G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.						
Albany & Greene	R.C.57-127	Br. No. 4, S.H.364; Br. No. 1, S.H. 8388; Br. No. 3, S.H. 1220; Br. No. 1, S.H. 5370; Br. No. 5, S.H. 997; Br. No. 1, S.H. 998; Br. No. 5, S.H. 1774B; Br. No. 1, S.H. 1774 and Br. No. 2, S.H. 1774	....	Cleaning and Painting 9 Bridges	$600 Plans $10	$11,000
Greene (Rte. 81)	R.C. 57-128	Cookaburg-Greenville Pts. 2 & 3, S.H. 8197	5.87	Asphalt Concrete	$12,000 Plans $10	220,000
Greene (Rte. 385)	R.C. 57-129	Catskill Village, Bridge No. 1, S.H. 5716	0.10	Reconstruction of Abutments, Wingwalls, Sidewalks, Etc. on Exist. Bridge	$1,200 Plans $10	23,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Herkimer (Rtes. 5 & 167)	FAC 57-8	City of Little Falls: Route 167 Arterial, Easterly	0.69	Asphalt Concrete, Ty. 1A	$11,000 Plans $10	210,000
	FARC57-137	Section Little Falls-Dolgeville, S.H. 133 Project U-F-584(3)	(0.06) (Int.)			
Montgomery	C.R. 57-2	City of Amsterdam: Rte. 5S Arterial Connection, FAC 55-8	....	Removal of Human Remains	$1,200 Plans $10	22,000
Montgomery & Oneida	M 57-15	Erie Canal Bridges at Randall, Utica, Whitesboro, Rome and New London	....	Cleaning and Painting 5 Bridges	$1,600 Plans $10	30,000
Montgomery & Oneida	M 57-10	Barge Canal Terminal at Utica Barge Canal Terminal at Fonda	0.44	Wire Mesh Fencing and Gates	$400 Plans $10	8,000
Oneida (Rte. 8)	FARC 57-138	Utica-Bridgewater, S.H. 559 Clayville Village, S.H. 5079 Project F-522(2)	1.71 (0.51) (Int.)	Asphalt Concrete	$24,000 Plans $15	445,000
Oneida (Rte. 49)	FARC 57-139	Vienna-New London, S.H. 1159 Project F-U-624(5)	0.57	Asphalt Concrete Prestress. Conc. Beam Br. 251.8'	$22,000 Plans $10	406,000
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Bldg., Syracuse, N. Y.						
Cayuga & Seneca (Rte. 31&89)	R.C. 57-140	Br. No. 3, Canoga-Halsey Corners, S.H. 8363 Br. No. 1, Montezuma-Port Byron, S.H. 5610	....	Cleaning and Painting 2 Bridges	$700 Plans $10	12,000
Cayuga & Wayne (Rte. 370 & 104)	FARC 57-130 FASH 57-14 FASH 57-15	Wolcott-Red Creek, S.H. 5290; Victory-Red Creek Pt. 1, S.H. 8048; S.H. 5290-Westbury and Westbury-S.H. 8048 Proj. F-114(2)	5.39	9" Cem. Conc. Pavt. 24-48' Wide = 5.25 Mi. Misc. Work = 0.14 Mi.	$60,000 Plans $15	1,102,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	Losp 57-2	Lake Ontario State Parkway, Sects. B-C-D and East Monitou Rd..	9.20	Roadside Development	$7,000 Plans $25	131,000
DISTRICT No. 5, E. G. H. Youngmann, District Enginner, 65 Court St., Buffalo, N. Y.						
Chautauqua & Erie (Rte. 5)	R.C. 57-132	Southwestern Boulevard, S.H. 1852 (Br. No. 1)	....	Cleaning and Painting 1 Bridge	$1200 Plans $10	23,000
Niagara	M 57-12	Erie Canal Bridges at Vernon St.; and Main St., Middleport; C.R. 94 and Gasport	....	Cleaning and Painting 4 Bridges	$800 Plans $10	15,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 West Main St., Hornell, N. Y.						
Steuben (Rte. 17)	FARC 57-131	Big Flats Gibson, S.H. 742 East Corning-Horseheads, Pt. 1, Fash 55-5 Project F-661(7)	0.62 (0.84) (Acc.)	9" Cem. Conc. Pavt. 24' Wide = 0.26 Mi. Asph. Conc., Opt. = 1.11 Mi. Misc. Work = 0.09 Mi. Hy. Sep. Comp. I-Beam 189.8'	$22,000 Plans $15	405,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Jefferson (Rte.3)	FARC 57-133	Carthage Village: State and School Sts. and West End Ave., S.H. 5344 Carthage-Wilna, S.H. 624 Fargo-Natural Bridge, S.H. 8190 Project F-273(4)	4.11	Asph. Conc. = 4.10 Mi. Misc. Work = 0.01 Mi.	$78,000 Plans $15	1,424,000
St. Lawrence, New York & Grenville, Ontario, Can.	OBA 57-2	Ogdensburg Bridge, Cont. No. 2	....	Bridge Substructure (Piers C1 to C14 and U1 to U13 Incl.)	$166,000 Plans $15	3,015,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley, Poughkeepsie, N. Y.						
Ulster (Rte. 213)	FARC 57-134	Kingston-Rifton, S.H. 116 Eddyville Bridge, S.H. 5192 Project US-485(1)	0.38	9" Cem. Conc. Pavt. 24' Wide = 0.34 Mi. Asph. Conc. = 0.04 Mi. Hinged Steel Arch Br. 340'	$40,000 Plans $15	738,000
Westchester & Bronx	BRP 57-1 CCP 57-1	Bronx River Parkway (Lower Section) Part 1 and Part 2 Cross County Parkway	3.02	Roadside Development	$10,000 Plans $15	192,000
Delaware (Rtes. 28&30)	FARC 57-80 R.C. 57-81	Andes-Margaretville, S.H. 8017 Margaretville-Halcottsville, S.H. 5384 Project S-459(1)	0.48	9" Cem. Conc. Pavt. 22'-40' Wide = 0.36 Mi. Asph. Conc., Opt. = 0.09 Mi. Misc. Work = 0.03 Mi.	$11,000 Plans $10	210,000
Delaware & Schoharie (Rte. 23)	R.C. 57-135	Grand Gorge-Stamford-Harpersfield, S.H. 5343	5.88	Asphalt Concrete	$30,000 Plans $10	545,000
Otsego (Rte. 7)	FARC 57-121	Wells Bridge-Otsego, S.H. 5153 Project F-628(6)	3.53	Asphalt Concrete Widen Exist. R.C. Beam Br. 30' Widen Exist. R.C. Beam Br. 36'	$35,000 Plans $15	613,000
DISTRICT No. 10, M. E. Goul, District Engineer, Little East Neck Rd., Babylon, L. I., N. Y.						
Nassau (Rte. 25D)	FAHHE 57-2	Horace Harding Expressway Extension Cont. #4 (Willis Ave. to Guinea Woods Rd.) Project U-862(13)	5.85 (5.50) (Acc.)	9" Cem. Conc. Pavt. (Carbon Black) 266.36' Var. Wide = 1.82 Mi. 9" Cem. Conc. Pavt. Var. Wide = 2.16 Mi. Asph. Conc., Opt. = 2.86 Mi. Misc. Work = 4.49 Mi. 2 Hy. Seps. R.C. Rigid Frames 87.1' and 44.6' 5 Hy. Seps. Comp. Steel Girders 80.8', 273.5', 182.3' 137.5' and 186'	$295,000 Plans $100	5,355,000
Suffolk	SMSP 57-1	Sunken Meadow Spur Parkway, Cont. 8	7.07	Planting and Seeding	$11,000 Plans $15	202,000
Suffolk (Rte 27)	R.C. 57-136	Westhampton-Quogue, S.H. 1571 Br. No. 138 Patchogue-Moriches, S.H. 5488 Br. No. 134	....	Cleaning and Painting 2 Bridges	$450 Plans $10	8,000
Suffolk	B P. 57-65	Point O'Woods and Ocean Bay Park	1.42	Hydraulic Fill (Beach Protection	$5,000 Plans $10	97,500

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wages, Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

Re: O.B.A. 57-2, St. Lawrence County, N. Y., and Greenville, Ontario, Canada: Maps, plans, specifications and proposals may be seen and obtained at the offices of Dr. P. L. Pratley, 909 Drummond Building, Montreal, Canada, and at Modjeska and Masters, Forster at 6th Street, Harrisburg, Pa.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

JOHN J. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: August 29, 1957.

Central School District No. 1 Yorktown, Etc.

NOTICE TO CONTRACTORS:

Sealed proposals for the construction of three new elementary schools and an addition and alteration to one existing elementary school, all in Central School District No. 1, Towns of Yorktown, Somers and Cortlandt, Westchester County, and Putnam Valley, Carmel and Phillipstown, Putnam County, will be received by the Board of Education of said school district at its office, Lakeland High School, U. S. Route 6, Mohegan Lake (near Peekskill, New York) Westchester County, New York, on the 29th day of August, 1957, at 8 o'clock p. m. (D.S.T.), at which time and place the proposals will be publicly opened and read. The proposals will be for the construction of three new elementary schools and one addition as follows:

1. New elementary school on the Gomer Street site, Town of Yorktown, Jefferson Valley, N. Y. (Proj. 5604)
2. New elementary school on the Lexington Ave. site, Town of Yorktown, Mohegan Lake, N. Y. (Proj. 5605)
3. New elementary school on the Lincoln Ave. site, Town of Cortlandt, N. Y. (Proj. 5609).
4. Addition and alterations to Van Cortlandtville School, Town of Cortlandt, N. Y. (Proj. 5603).

The three new elementary schools are substantially identical, except for necessary grading, utilities and foundations.

Separate proposals for each of the projects as well as combined proposals for two or more projects will be received for the following work:

Contract No. 1	General Construction
Contract No. 2	Plumbing
Contract No. 3	Heating and Ventilating
Contract No. 4	Electric
Contract No. 5	Site Development
Contract No. 6	Food Service Equipment

Proposals shall be made in the form set forth in the contract documents. Those desiring to bid upon more than one project should, in addition to bidding upon each project, also complete and execute the form entitled "Combination Bids."

Forms of proposals, drawings, specifications and other contract documents may be obtained by bidders at the office of the Architects, Reginald E. Marsh & Associates, 101 Park Avenue, New York 17, New York, upon deposit of the following sums:

General Construction, Plumbing, Heating & Ventilating and Electrical documents—$60 for the three elementary schools and $25 for the alterations and additions to the Van Cortlandtville School; Site Improvement documents $20 for the three new schools; Food Service Equipment documents $20 for all four schools.

Deposits will be returned in full to the bidder upon return of the documents in good condition within thirty (30) days after the opening of bids provided that a formal proposal has been submitted by the bidder. Complete sets of plans and specifications for contracts 1 to 4 inclusive will be issued to each prospective bidder. Additional sets or portions thereof as required may be obtained by any bidder upon payment of the cost of reproduction. One-half of the amount of deposit check or checks shall be forfeited by any Contractor failing to submit a proposal for at least one project.

Each bid must be accompanied by a certified check made payable to Board of Education for five per cent (5%) or an approved bid bond in the amount of ten per cent (10%) of the amount of the bid as a guarantee that in case of award of the contract to the bidder, he will within two weeks thereafter execute the contract and furnish the required bonds and upon failure to do so he shall forfeit the security as liquidated damages.

The checks or bid bonds of all except the three lowest bidders will be returned within ten days after the opening of the bids, and the remaining checks or bid bonds will be returned when the contract is executed, or in any event within 45 days after the opening of the bids. No bid may be withdrawn within forty-five days after the actual date of opening thereof.

The successful bidders will be required to furnish a performance bond in approved form and with sureties satisfactory to the Board, which bond shall be in the amount of the contract and shall be conditioned upon the faithful performance of the contract, and a separate labor and material bond in the amount of the contract price conditioned upon the payment of all just claims for materials and labor furnished under the contract.

The Board of Education reserves the right to waive any informalities in or to reject any or all bids, and to award contracts upon such combination bids as it may consider to be for the best interest of the District.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and wage rates to be paid under the contract.

BY ORDER OF THE BOARD OF EDUCATION, CENTRAL SCHOOL DISTRICT NO. 1, TOWNS OF YORKTOWN, SOMERS AND CORTLANDT, WESTCHESTER COUNTY AND PUTNAM VALLEY, CARMEL AND PHILLIPSTOWN, PUTNAM COUNTY.

Thomas Rockett
President of Board of Education
July 16, 1957.

Bids: August 20, 1957

Contract NYA-920,002

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
RUNWAY V PRIME
GRADING AND SURCHARGE FILL

Sealed proposals for grading and the placement of surcharge fill for Runway V Prime to be constructed at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, August 20, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, August 1, 1957

Bids: August 27, 1957

Contract NYA-650.048

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
INTERNATIONAL ARRIVAL AND
AIRLINE WING BUILDINGS
WEST WING BUILDING—OFFICE SPACE

Sealed proposals for furnishing and installing interior finishes for office space between column lines 17 and 19 and Band Fin the West Wing Building at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, August 27, 1957 at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, August 1, 1957

Bids: August 20, 1957.

New Jersey Turnpike Authority

CONTRACT NO. R-8 (R-8A, R-8B)

Proposals are invited for Contracts Nos. R-8, R-8A and R-8B which involve the construction of fuel pump island pavement at Service Areas 10S and 10W (Contract No. R-8A) and the construction of an additional toll lane No. 6 at Interchange No. 10 (Contract No. R-8B) on the New Jersey Turnpike in Middlesex County, New Jersey.

The principal items of work include:

For Contract No. R-8A	
Asphaltic Concrete Pavement Removing	2850 sq. yds.
10 Inch Fuel Pump Island Pavement (Portland Cement Concrete)	2620 sq. yds.
For Contract No. R-8B	
Roadway Excavation Earth	1200 cu. yds.
Borrow Excavation	920 cu yds.
10 Inch Portland Cement Concrete Approach Slab Pavement	90 sq. yds.
Asphaltic Concrete Pavement 1½" thick	1650 sq. yds.
Standard Reversible Toll Island	Lump Sum
Extension of Canopy	Lump Sum
Erection of Toll Booth	Lump Sum

Contract No. R-8 comprises all the work under Contracts Nos. R-8A and R-8B. If a bidder submits a proposal for Contract No. R-8, he must also submit proposals for Contracts Nos. R-8A and R-8B.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock Daylight Saving Time, on the morning of August 20, 1957, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement on the form furnished by the Authority.

Contract documents may be examined during office hours after July 30, 1957, at the office of the Authority and at the office of the Consulting Engineers, DeLeuw, Cather and Brill, 202 East 44th Street, New York 17, New York. Contract documents will be furnished upon payment of ten dollars ($10.00) for each set, upon application to the Authority.

Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY AUTHORITY
Joseph Morecraft, Jr., Chairman

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4944) will be received at Albuquerque, New Mexico until August 22, 1957, for furnishing labor and materials for Rehabilitation of Angosturo Diversion Works, Middle Rio Grande Project, New Mexico. Location near Bernalillo, New Mexico. Principal terms are Rehabilitating and painting six (6) radial gates and hoists and furnishing and installing two (2) new radial gates; 11,500 sq. ft. of sheet piling; 110 cu. yds. of concrete; electrical installations; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, Post Office Box 252, Aubuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

OFFICIAL PROPOSALS

Bids: August 30, 1957

Construction of Sewers, Laterals, Etc. Town of Wallkill, Orange County, N. Y.

NOTICE TO BIDDERS FOR CONSTRUCTION OF SEWERS, LATERALS, ETC. IN WASHINGTON HEIGHTS SANITARY SEWER DISTRICT, TOWN OF WALLKILL, ORANGE COUNTY, NEW YORK

NOTICE IS HEREBY GIVEN that sealed proposals are invited for furnishing the materials and labor necessary according to the plans and specifications for constructing a sanitary sewer system in the Washington Heights Sanitary Sewer District in the Town of Wallkill, Orange County, New York, and under a contract in the form substantially set out in said specifications.

Sealed proposals will be received by the Town Board at the office of Harry C. Carpenter, Engineer, 4 Fairlawn Avenue, Middletown, New York, at 8 o'clock in the afternoon (DST) on August 30, 1957, and will be opened and considered publicly by said Board at said time and place.

Plans, specifications and estimates of the expense, proposed contract for the execution of work, and forms of proposal can be examined at and copies secured from the District's Engineer, Harry C. Carpenter, at his office 4 Fairlawn Avenue, Middletown, New York, from and after the publication of this notice.

Plans, specifications and estimates for the work will be exhibited publicly in the office of the Town Clerk, Irving J. Gibbs, in the hamlet of Circleville, in said Town of Wallkill, from and after this date and until bids are received and opened.

Proposals must be made upon and in accordance with the form of proposal accompanying the plans and specifications, which form of proposal will contain instructions to bidders.

A deposit of $25.00 will be required for each set of plans and specifications distributed, which amount will be refunded only to those submitting formal bids if said plans and specifications are returned in good condition after bids have been received and acted upon by the Town Board.

Each proposal shall be accompanied by a certified check on a solvent bank of the State of New York, to the order of Kenneth W. Van Sciver, Supervisor, in the amount of five percent of the total amount of the bid, or a bond with sufficient sureties to be approved by the Supervisor, in the penal sum equal to said five percent, conditioned that if the proposal is accepted the successful bidder will enter into a contract for the work, and that he will execute within fifteen days from the date of the acceptance of the proposal a suitable surety bond in the sum of the amount of the contract, conditioned for the faithful prompt performance and completion of the work specified in the contract.

All deposits, except those of the successful bidder, will be returned.

Upon the acceptance of his bid, if the successful bidder fails to enter into a contract within fifteen days from the date of the acceptance of his proposal or fails to give the security prescribed in this notice within the time limitation, then the check deposited as aforesaid and the moneys standing to credit of the same, shall be forfeited to the Town as liquidated damages, or the Supervisor may enforce payment of the bond for the benefit of the Town.

The Town Board reserves the right to waive any informalities in, or to reject all bids submitted and to accept the bid of the lowest responsible formal bidder.

Dated, August 1, 1957.

Kenneth W. Van Sciver
Supervisor
William H. Hamblin
Harold F. Coddington
Hanford Terwilliger
J. Raymond Townsend
Justices of the Peace
Acting for the Town of Wallkill in behalf of Washington Heights Sanitary Sewer District.

Bids: August 20, 1957

Contract NYA-140.040

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
ADDITIONAL PAVING AT FUEL TRUCKS PARKING FACILITY

Sealed proposals for constructing additional paving at the fuel trucks parking facility at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, August 20, 1957 at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, August 1, 1957

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 10:00 A.M., E.S.T., September 13, 1957, and at that time will be publicly opened, for the following: Furnishing all plant, labor, materials, equipment, and services and performing all work to convert domestic, commercial, and industrial equipment in the Miraflores and West Bank area of the Panama Canal Zone, which includes Pedro Miguel, Miraflores Filtration and Pumping Plant, Palo Seco, but does not include the Miraflores or Pedro Miguel Locks. Bid data, specifications, and drawings are available for examination in the office of Chief, Procurement Division, 21 West St., New York 6, N. Y. Sets of data may be obtained from this office upon payment of $25 deposit which will be refunded if data is returned within 40 calendar days after the bid opening.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4914) will be received at Farmington, New Mexico, until September 10, 1957, for furnishing labor and materials for residences, streets, utilities, and power facilities for Government Community at Navajo Dam, San Juan Division, Colorado-New Mexico, Colorado River Storage Project. Location near Farmington, New Mexico. Principal items are 25,650 cu. yds. excavation; constructing 15 three-bedroom residences; constructing washhouse; and other work. Completion time 240 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

EMPLOYMENT OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Gunite Superintendent—Wanted immediately. Middle Atlantic States. State age, experience, availability, salary desired. P-4640, Engineering News-Record.

Engineer-Gunite, wanted immediately, must know estimating, take complete charge of all gunite operations. Executive position ultimately available. P-5355, Engineering News-Record.

Architectural Engineer—with at least 8 to 10 years experience in steel and concrete. Permanent position—associateship possibilities with other if ability proven. Work includes churches, schools and commercial buildings. Air-conditioned offices. Hospitalization and other benefits. Central Pennsylvania architect. Please send resume of education and experience, stating salary requirements and availability, also snapshot and references. P-5527, Engineering News-Record.

Wanted—Experienced Designers on Highways and Bridges. Locations Philadelphia and Harrisburg, Pa. and Columbus, Ohio. Long range work program. Good opportunities to qualified applicants. Reply stating experience, availability and salary requirements. P-5553, Engineering News-Record.

Assistant City Engineer Wanted: general municipal engineering and administrative duties. Thoroughly experienced. Must be registered in Ohio. Salary $6800 per year. Write giving experience resume to Service-Safety Director, City Building, Mansfield, Ohio.

POSITIONS VACANT

Engineer-Cost Analyst-Major construction company seeks Manager of Cost Analysis and Control to head staff of cost engineers and accountants for multi-million dollar projects. Permanent position. Age 32-45. Salary to $14,000. Location New York. P-5712, Engineering News-Record.

Estimators—Military & Airfield Work. Architectural, Structural, Civil, Mechanical & Electrical. Quantity Take-Off & Pricing. Overseas. Mild climate. All replies confidential. Write or call Mr. Levy, Builders Estimating Service, 120 Greenwich Street, N. Y. C.

Wanted—Experienced grading and drainage superintendent for position with expanding Michigan contractor. Paving experience would also be valuable but not essential. Write, giving full particulars and salary desired: Canonie Construction Co., South Haven, Mich.

Assistant City Engineer, Barberton, Ohio. Registered Civil Engineer. Apply Director of Public Service, Municipal Building, Barberton, Ohio. List qualifications and experience.

Wanted: Civil Engineering Draftsmen for work on large Southern California irrigation and drainage project. Desert type climate. Permanent position with excellent opportunity for advancement for qualified men. Salary range $3,600 to $6000 per year, dependent on experience. All applications kept confidential. Must be citizen. Please give full details of experience and education. P-5644, Engineering News-Record.

Inspectors—Civil, Mech & Electrical. Overseas Airbase Construction. Please send detailed resume to: P-5463, Engineering News-Record.

(Continued on the following page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Position Wanted ads take ½ of above rate.
Box Numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. August 15th issue closes August 5th

DEPUTY RESIDENT ENGINEER

For a $40 million rockfill and concrete dam in Iraq. Two-year contract; approximately 3-year completion schedule. Family housing at site, but no local educational facilities for children. Fill type dam construction experience required—preferably rockfill. Must be fully capable of assuming duties of Resident Engineer as required. Position is available immediately. Excellent salary. Please send complete personal and experience record to Hugo O. Niemi, Personnel Manager.

HARZA ENGINEERING CO.
400 W. Madison St. Chicago 6, Ill

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-3223, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

HIGHWAY & BRIDGE ENGINEERS

Well established Consulting Engineer has immediate openings for engineers experienced in Highway and Bridge design and construction. Permanent positions. Liberal Employee benefits. Salaries commensurate with education and experience. Send complete resume including salary requirements and availability.

WILLIAM H. McFARLAND
ENGINEER
333 Front Street Binghamton, New York

Experienced 1st Class Personnel for General Contractor on Construction Project Wanted

Engineer or Draftsman for office, experienced in calculations, computations, quantity estimating, drafting etc.
Engineer, Civil or Surveyor, experienced in field layout work.
Bookkeeper, with accounting, administrative and typing ability.
Administrative Clerk with ability in correspondence and typing.

Write: **P. O. Box 402**
Barre, Vt.

COST ENGINEERING

We have an excellent opportunity for a man with experience in capital cost and profitability estimating. Work consists of cost estimating, development of estimating methods, and manufacturing cost analysis for all types of chemical processing plants in connection with Diamond's long-range chemical growth program.

Experience in chemicals desirable but not required. Send complete resume including education and salary requirement to:

C. C. Brumbaugh
Director of Engineering
Diamond Alkali Company
300 Union Commerce Building
Cleveland 14, Ohio

POSITIONS VACANT

(Continued from preceding page)

Civil Engineers to work with consulting engineering firm. Long established municipal consulting firm desires to secure graduate civil engineers for permanent positions. Experience in water and sanitation required. Offices located in very desirable small college community in Colorado area. Expansion of firms operations provide unlimited opportunities for advancement for properly qualified engineers. Firm desires to employ engineers with from one to fifteen years of experience. Salaries $5,100 to $6,600. Civil engineers with masters degree in sanitary engineering or masters degree in structural design also required. Salary commensurate with experience. Please give experience and full details in reply, including transcript of post-graduate work. Replies will be held confidential if requested. P-5570, Engineering News-Record.

Teaching positions open in Civil Engineering and Electrical Engineering in a growing engineering college. Salary from $5500 to $8000 for school year of nine months, depending upon training and experience. Contact Dean of Engineering, University of Nevada, Reno, Nevada.

Construction Superintendent by middle sized general contractor doing heavy engineering construction such as sewage and water treatment plants, power plants and drainage structures. Applicant should have some engineering training and be able to take full responsibility. Permanent position for right man. Send work record and education resume. P-5705, Engineering News-Record.

Engineering teacher—Construction management, highways and/or structures. Instructor, assistant or associate professor. 8-mo. school year. Rapidly expanding, small university. Airmail queries to Civil Engineering Dept., University of Alaska, College, Alaska.

Estimators—Experienced in Industrial Construction. Permanent positions in Southeastern States. Send resume of education and experience, references and salary requirements. P-5675, Engineering News-Record.

Civil Engineers Wanted—with experience in the fields of Highway design, structures, water distribution systems, sewers, sewage treatment, pumping stations and storm drains. Public works experience desirable but not essential. Good starting salaries, excellent working conditions; stable community, fine opportunity for advancement, Merit System increases and retirement benefits. Send resume of experience and salary desired to: Department of Public Works, Baltimore County Office Building, Towson 4, Maryland.

CONSTRUCTION SUPERINTENDENT

wanted by well established and expanding contractor in outstate Michigan. Experience on schools, industrial, commercial, and monumental buildings desired. Give age, outline of education and experience, salary expected, and snapshot if available. Our employees know about this advertisement. Write

P-5694—Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEER

Position available with pioneer South Florida Corporation for graduate engineer with at least 10 years experience in design and operation of rock crushing and screening plants. Some experience in ready-mix and concrete block installations also desirable—age not over 40—to work mostly in engineering office with frequent trips to local plants. Send summary of education, experience, and salary expectation.

P-5713—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

POSITIONS VACANT

City Engineer and Planner, small New England city. C. E. Graduate or seven (7) years experience. Municipal experience preferred but not mandatory. Please state qualifications and salary desired in first letter. Apply, Office of Mayor, Franklin, New Hampshire.

Wanted Engineers, Draftsmen, and Layouts. One of the leading structural steel and plate fabricating companies in Florida (located in Central Florida). Ideal working conditions, air conditioned office, co-benefits, insurance, hospitalization, vacation, and holidays. P-5691, Engineering News-Record.

The State of New Jersey has urgent need for qualified civil engineers with experience or interest in hydraulic or hydrographic engineering. Positions covered by Civil Service; offer excellent promotional opportunities; attractive retirement plan. Starting salaries range from $4740 to $6660 per annum depending upon qualification. Write Dept. Conservation & Economic Development, Div. Water Policy & Supply, 520 East State St., Trenton, N. J.

Sales Engineers—structural experience, to promote, estimate and negotiate sub-contracts gypsum and Cretepanel roof decks. Opportunities in Pittsburgh-Cleveland area and Western New York area. Write R. G. Speed, Martin Fireproofing Corporation, Buffalo 17, New York.

Teaching—Increased enrollment requires new staff members as instructors at associate professor level to teach Structures, Fluid Mechanics, Mechanics and Strength of Materials. Opportunities to participate in contract research. Also opportunity for advanced degree for instructors. Head Civil Engineering Department, University of Tennessee, Knoxville, Tennessee.

Bridge Designers and Draftsmen with experience for permanent positions. Forward full educational, employment and personal data with salary requirements. Macomber & Faber, 1824 North Fourth Street, Harrisburg, Pennsylvania.

SELLING OPPORTUNITY OFFERED

Manufacturers Representative wanted for several good territories in the United States. Liberal Commissions Chinook Wind Portable Heaters & Torches. Write International Manufacturing Co. 675 Rio Grande, Littleton, Colorado.

(Continued on page 88)

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.

400 W. Madison St. Chicago 6, Ill.

STRUCTURAL ENGINEERS

Large architectural engineering firm in Dallas, Texas, with highly diversified practice, needs structural engineers with building design experience. Permanent positions. Write George L. Dahl Architects & Engineers, 2101 North St. Paul Street, Dallas, 1, Texas. State qualifications, experience record and minimum salary expected.

RESIDENT ENGINEERS

Graduate Civil Engineers with experience in concrete and earthwork construction to serve as Resident Engineers on Dams and Flood Control projects in Pennsylvania. Design Engineers with related experience are also desired.

Salary open. Send resume showing experience, salary requirements and references to:

P-5586, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

SALES ENGINEER TRAINEE

Recent civil engineer graduate or non-graduate with highway engineering or construction experience to enter sales training program. Position requires relocating at intervals during training period. Will eventually lead to highway material sales in Tar Products Division. Write stating education, experience and salary requirements. All replies will be confidential.

KOPPERS COMPANY, INC.

Personnel Manager

108 Koppers Building—Pittsburgh 19, Pa.

CONTRACTOR'S ENGINEER WANTED

—college degree in engineering or equivalent in experience. Job consists of estimating, purchasing, and overseeing jobs from the office of an expanding contractor in outstate Michigan. Give age, outline of education and experience, salary expected, and snapshot if available. Our employees know about this advertisement. Write

P-5693 Engineering News-Record
520 N Michigan Ave., Chicago 11, Ill.

STRUCTURAL ENGINEER

Steel fabricator, Philadelphia area, wants experienced design man. Good working conditions. Steady employment. Prefer older man. Write full particulars to:

P-5656, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SALES ENGINEER

ATLANTA

We need engineer with sales ability, experienced in concrete or concrete construction to head our new District Sales Office. Long-term interesting, independent and challenging postion. Salary, expense and commission.

SIKA CHEMICAL CORPORATION
Passaic, New Jersey

BRIDGE DESIGNERS DETAILERS

We have a number of openings for experienced Bridge Designers and Detailers. No arbitrary length of previous employment is established; selection will depend on the design know-how and judgment a man has absorbed from his own particular experience. Only engineers with a sense of responsibility and a professional approach to their duties will be accepted.

The work involves varied types of structures for highway systems. Some of the positions carry supervisory responsibilities; these positions require men willing to handle the organizational and administrative problems connected with major engineering projects. In some cases, the work will require contact with the firm's clients where the ability to present and discuss an engineering problem intelligently is essential. Junior personnel with the firm are given priority for these positions when they become qualified.

Salaries depend on the individual and are individually negotiated. Increases are based primarily on merit. Other benefits are liberal. Openings also in Rochester, N. Y. office.

CAPITOL ENGINEERING CORPORATION
DILLSBURG, PENNSYLVANIA

Highway & Bridge Engineers Designers & Draftsmen

Career opportunities for men interested in professional recognition. Excellent working conditions and employee benefits including liberal retirement program.

Openings in Charleston, West Virginia.

Air Mail Resume to R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., INC.

BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

SURVEYORS

(TOPOGRAPHIC)

Challenging opportunities for Party Chiefs and Instrumentmen experienced in map survey control. Experience with aerial photographs and theodolites desirable. Permanent positions; considerable travel necessary. Forward detailed resume and salary desired.

AERO SERVICE CORPORATION
Photogrammetric Engineers
210 E. Courtland St. Phila. 20, Pa.

CONSTRUCTION SUPERVISORS

Supervisory personnel with experience in responsible supervision and inspection of concrete and earthwork construction to serve as Construction Supervisors on Dams and Flood Control projects in Pennsylvania. Engineering degree not required.

Salary open. Send resume of experience, salary requirements and references to:

P-5583, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, New York 36, N. Y.

Construction Superintendent Wanted

Superintendent for Engineering type construction such as pumping stations, sewage and water treatment plants and flood control work. Steady employment for aggressive qualified man. Prefer man with engineering background. Send complete details on background and education. Only those well qualified need apply. Must be willing to move around southern states at job completion.

P-5505, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

FIELD ENGINEER WANTED

Preferably civil engineering graduate with several years field experience by large heavy construction contractor to lay out work, make simple estimates and assist superintendent. Permanent position, location Maryland. Excellent opportunity for ambitious man as several of our executives have started with us in similar positions. Please state age, education, short experience outline, and salary desired.

P-5590, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Illinois

ARCHITECTURAL ENGINEER

Architectural Engineer between ages of 25 and 35 with interest in design of industrial buildings and structures.

Excellent opportunity with consulting engineering firm in Middle West. Liberal benefit plans and good working conditions.

Send resume of education and experience with statement of salary requirements to:

P-3222, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to

Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

EMPLOYMENT SERVICE
(Continued from page 86)

Salaried personnel, $5,000-$30,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L. P. O. Box 674, Manchester, Vermont.

Wanted Engineers, Designer, Draftsmen, All lines. Chemists, teachers and industrial engineers. Recent grads. Cleveland Engineering Agency, 2132 E. 9, Cleveland 15, O.

POSITIONS WANTED

Construction Management—BSCE, 37, excellent experience in heavy construction including estimating, bidding and construction of heavy concrete structures, earthworks and hydro-projects, interested in salary-bonus arrangement with moderate size contractor in Western states. Now employed at $12,000 plus. PW-5661, Engineering News-Record.

Building Construction Field Supt: Industrial, commercial, institutional, churches, etc., similar position in field desired. 25 years exp; Resident of N. J.; Can travel. PW-5659, Engineering News-Record.

Civil Engineer—10 years construction experience includes field layout, estimating, purchasing & expediting. Able to handle job from bid to completion. Desires job with general contractor. Minimum salary $10,000. Prefer Mid-West. PW-5652, Engineering News-Record.

Superintendent or ass't super., tunnel work, cofferdam, pile driving, shoreing, underpinning of any kind. Will travel anywhere, speak Spanish, organize crews. PW-5706, Engineering News-Record.

Superintendent or General Foreman pipe and dam work. Go anywhere, speak Spanish, organize own crew. References. P. O. Box 91, Brooklyn (Vanderveer Sta.), N. Y.

B.S.C.E.-4 yrs. experience in surveying & construction—2 yrs. exp. in highway design, specifications & contracts—desires to enter consulting field, will work in my own office on a part-time basis as I still hold my present position in Washington, D. C.—will also get you the best contract negotiations with the foreign governments of Latin America. I have the knowledge and the necessary connections. PW-5720, Engineering News-Record.

Professional Engineer, M. ASCE. Registered, advanced degrees. Experience in administration, engineering teaching, sanitary and public health work, construction of roads, bridges, buildings, sewers. Completing present assignment. PW-5721, Engineering News-Record.

Mechanical Engineer, registered P.E. in Florida, 9 yrs. experience chiefly in A.C., heating, and refrig. design seeks position in Florida. PW-5627, Engineering News-Record.

Contractor's assistant, competent estimator—job manager, graduate engineer, 31, seeks position of responsibility with medium size building contractor. Prefer southeast or Middle Atlantic states. PW-5674, Engineering News-Record.

Structural engineer 30 years experience design sewage treatment, water filtration plants, bridges, buildings—complete charge. PW-5688, Engineering News-Record.

Construction Executive: Age 41. Nineteen years experience. All phases industrial, commercial, and institutional construction. Bids to completion, contract negotiation, supervision, job cost accounting and financing analysis. Desire permanent connection with young, growing, well financed organization with possible future participation. Minimum $15,000. Available November 1957. References. PW-5684, Engineering News-Record.

Construction Engineer; 20 years experience, age 41, seven years foreign, speak Spanish, French, Italian, Portuguese. Heavy industrial construction experience, will consider any type supervision or engineering, foreign or domestic. PW-5698, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES **EQUIPMENT - USED or RESALE**

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

BUSINESS OPPORTUNITIES

Engineering and Surveying Business. Established clientel. Registered personnel. Includes equipment; records. North Florida. BO-5704, Engineering News-Record.

Want to Purchase: Interest in small Sanitary Engineering Firm. By thoroughly experienced engineer chemist. Please give brief description in first letter. BO-5679, Engineering News-Record.

WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

WANTED
USED CATERPILLAR TRACTORS
D-7 Series 17A & D-8 Series 15A, preferably with Torque Converter. Also Caterpillar DW-21. Submit detailed offers to:
INTERCONTINENTAL EQUIPMENT CO. Inc.
120 Broadway, New York 5, N. Y.

CRANE RENTAL SERVICE
New or Like-New MACHINES
Anywhere in the U.S.A.
LIMA CRAWLER CRANES
to 85-Ton Capacity
MICHIGAN TRUCK CRANES
to 25-Ton Capacity
Shipped new directly to your project.
LEASE . . Don't Buy
Conserve Operating Capital
Get our Special rates on long term leases.
Call, wire or write Today
MILTON F. PRIESTER
CONTRACTORS EQUIPMENT COMPANY
249 South Third St.—P. O. Box 1093
Memphis, Tenn.—JAckson 5-6888

FOR RENT
NORTHWEST MOD. 6 PULLSHOVEL OR SHOVEL
NORTHWEST TRUCK CRANE 20 TON
New Rochelle Construction Co., Inc.
505 Fifth Av. NE 2-0700 New Rochelle, N. Y.

TRACTOR-LOADER
1956 Allis-Chalmers, Mod: HD-16GC, Ser: 1309, Torque Converter, Hydraulic Steering Controls, 8 Bucket Teeth and general purpose Bucket. Machine worked 9 months, has been completely rebuilt.
BREEN 1165 Longwood Ave., Bronx 59, N. Y.
Tel: LUdlow 9-6016

Contractors School
NAME .....
ADDRESS .....
CITY .....
Learn how to figure labor, material costs on construction jobs. Write for 30 day free trial.
CONTRACTOR'S SCHOOL, Box 12, Dallas, Tex.

FOR SALE
ASPHALT PLANT
5000 LB. SIMPLICITY
Complete plant ready to operate including
3—20,000 gal. asphalt tanks with coils
1—10,000 gal. fuel oil tank
1—Highway 60B hot oil heater
1—Jeffery feeder and 80 ton bin
3—UD-18 International Diesel Motors
1—Hopkins Volcanic Triple burner—gas or oil
1—Mineral filler elevator and bin
1—Dust collector and air washer
1—Semi-automatic air cylinder operated controls
Presently operating in Cleveland, Ohio Producing up to 150 tons per hour.
FOR DELIVERY IN FALL 1957
THE HORVITZ COMPANY
4375 East 146th St. Cleveland 28, Ohio
LUdlow 1-2100

FOR SALE OR LONG RENTAL
MARION 93M SHOVEL
Serial 21514 with Cat. 337F Engine and Torque Converter. Purchased new July 1956. Excellent condition 2 buckets 2½ and 3 yd. $65,500.00. Located Birmingham, Alabama—Phone LYric 2-8164.
A. E. BURGESS CO., INC.
3700 10th Ave. North Birmingham, Alabama

BELL 47-G HELICOPTER
Purchased New in July 1953
Equipped with hydraulic boost controls, floats and other special equipment.
It is expected the helicopter will be available for sale on or about August 30, 1957. For bid papers write or phone:
THE PORT OF NEW YORK AUTHORITY
Dept. of Purchase & Administrative Services
111 Eighth Avenue, New York 11, N. Y.
Tel.: ALgonquin 5-1000, Ext. 206

BARGAIN
AMERICAN 795 S/N G.S. 2191
2 YD. DRAG, 70' BOOM CAT. ENG. GOOD CONDITION.
RYAN EQUIPMENT CO.
3350 Morganford St. Louis, Missouri
PR 1-0292

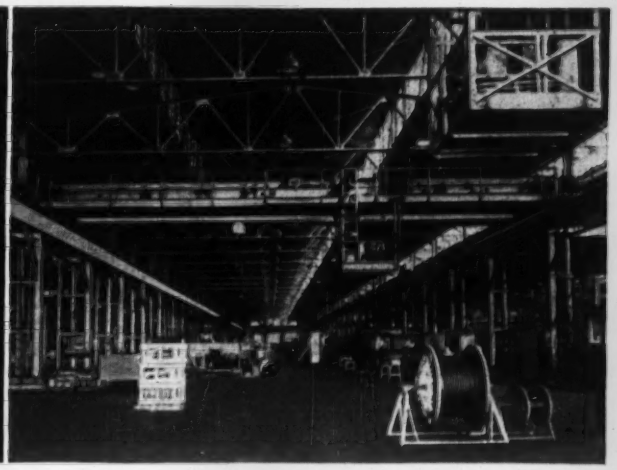
SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

GURLEY
FACTORY REPAIRS
Send your instrument directly to Gurley for repair, rebuilding, adjustment. Write for "Repair Service" leaflet plus 20-page "Surveyor's Notebook Tips."
W. & L. E. GURLEY
Dept. R, Troy, New York

SALE FOR RE-ERECTION INDUSTRIAL STEEL BUILDINGS

CHOICE BUILDINGS STILL AVAILABLE

LOCATED AT EDDYSTONE, PENNA. Suburb of Phila.



MODERN • ONE STORY

BUILDINGS TOTAL 1,300,000 SQ. FT.

•

UNITS FROM 30,000 TO 725,000 SQ. FT.

•

MATCHED-MARKED & LOADED F.O.B. CARS FOR RE-ERECTION

We will furnish foundation drawings and re-erection diagrams

89 OVERHEAD TRAVELING CRANES

From 10 ton to 70 ton capacity. 40 ft. to 80 ft. span. Immediately available. Sold either separately or with building structure. These cranes are cab operated, 230 volt D.C. operation. Several of these cranes have auxiliary trolleys.

These buildings are ideal for practically any type of industry and are geared to efficient, economical operation. Divided to suit your specific requirements.

- Length from 173 to 800 ft.
- Bays from 37 to 80 ft. wide. Clear span.
- 89 overhead traveling cranes.
- Buildings completely covered with 10 to 70 ton cranes.
- Buildings perfect for straight line production.

Detailed engineering data is available upon request. For additional information, write, wire or phone

LURIA BROTHERS & COMPANY, INC. PHILA. NATIONAL BANK BLDG. Phila. 7, Pa. • Rittenhouse 6-7455

FOR SALE

MANITOWOC LIFTCRANE

MODEL 3500

FORSYTHE EQUIPMENT CO., INC.
37-11 Vernon Blvd.
Long Island City 1, N. Y.

BARGAIN

FOR SALE OR RENT

1055 P&H Long Crawler, 110' Boom, 4 Yd. Drag Buda Eng.; Magna Torque. Good Condition.

RYAN EQUIPMENT CO.
3350 Morganford St. Louis, Missouri
PR-1-0292

For Sale

WALL FORMS

32,000 square feet Atlas Steel Concrete Wall Forms, in 1st class condition. Write:

P. O. Box 126
Wilmington, Dela.

CONCRETE FORMS

4500 sq. ft. Universal Concrete Forms. Complete and excellent. ½ price.

3/16 x 2 x 16 x 37-11/16 Liner Plates. Unused. ½ price.

UDELSON TRUCK SALES, INC.
3210 Woodland Ave. Cleveland, Ohio

SHOVEL

1955 P&H. Mod: 955A. Powered by Cat Diesel Mod: D337 with electric starter. 26' Shovel Boom, 19' Dipper. Air over hydraulic brakes on both hoist and digging booms. Also 100' Crane Boom and 25' Jib. As Crane rated at 50 Tons at 15'.

BREEN 1165 Longwood Ave., Bronx 59, N. Y.
Tel: LUdlow 9-6016

ROTARY DRYER FOR SALE

1—Rotary Dryer 9'x50'x⅜" thick, new roller bearings—$12,000

1—Allis-Chalmers 200 HP Slip ring motor, 60 cycle 3 phase, 1300 rpm, 440 V, 260 amps—$3,000

1—automatic electric starter Type I, 3 phase 60 cycle, 440 V form 2

1—safety switch series 3, 400 amps, 575 AC Volts

1—electric manual control lock, A. H. 200 HP, SEC. amps 146, Sec. volts 600

2—resistance block, type cast grid, class 93, Sec. amps 146, Sec. volts 600

Above 4 items $1250 complete

1—Buffalo Fan Size 8½ double inlet boxes (approx. 18" x 63") top horizontal discharge (approx. 48" x 48") $1,750

1—Bag House, approx. 60' x 80' x 40' high, with 400 standard cotton bags for metallurgical fumes, new metal hoppers, wooden frame building with corrugated metal siding $10,000

6—Transformers 100 KVA, 13200-440, $500 each

Located in Eastern Tenn.

P. O. BOX 9138
RICHMOND 27, VA.
PHONE RICHMOND 5-7491

NEW 3½ Yd. Carilloy T-1 Shovel Dipper with teeth and door for Northwest Single Stick 80D Shovel

HODGE & HAMMOND, INC.
720 Garrison Ave., New York 59, N. Y.
N. Y. Phone: Kilpatrick 2-2400
N. J. Phone: Market 3-5424

FOR SALE

MICHIGAN TRUCK CRANE

T6K W/25 ft. crane boom, ⅜ yd. clam bucket with teeth; backhoe attachment complete. This machine is in perfect condition. Price $8750.00.

NEW ROCHELLE CONSTRUCTION CO., Inc.
505 Fifth Ave., New Rochelle, N. Y. NE 2-0700

COMPRESSOR DIRECTORY

World's Best Rebuilts

FOR SALE OR RENT

Select Portables

25 CFM Lindsay
55 CFM Worth. (2)
60 CFM LeRoi
60 CFM Worthington (4)
75 CFM Worthington (3)
105 CFM Sullivan
105 CFM Worthington, gas (2)
105 CFM Worthington (diesel)
105 CFM LeRoi (gas)
120 CFM Gordon Smith (2)
125 CFM Worthington (2)
125 CFM Worthington (Rotary)
210 CFM Worthington (gas) (2)
210 CFM Worthington (diesel) (2)
315 CFM Jaeger-Diesel
315 CFM Worthington-Diesel (4)
315 CFM Schramm-Gas (2)
500 CFM Chicago Cat. Diesel (3)
600 CFM Worthington Int. Diesel (2)
800 CFM Chicago-Rotary
600 CFM Ingersoll-Rotary

STATIONARY COMPRESSORS—ALL MAKES

American
AIR COMPRESSOR CORP
DELL AVE & 48th ST. NORTH BERGEN, N. J.
Telephone UNion 5-4848

LOW COST INSTALLATION AND OPERATION

CABLEWAYS

IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR DAMS, BRIDGES, BREAK WATERS, FILTRATION AND BEVERAGE PLANTS

FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

- DROP HAMMERS
- STEEL LEADS
- HOISTS AND BOILERS
- DRIVING CAPS
- PILE DRIVER HOSE
- STEEL SHEET PILING

CONMACO — CONTRACTORS MACHINERY COMPANY
820A KANSAS AVE., KANSAS CITY, KANS. • DRexel 1-3930

MODERN BLOCK PLANT FOR SALE

1—Columbia Model 8, 2-block machine with pallet feeder, agitator, off-bearer with 4", 6" and 8" molds. Special molds 4" solids ½ sash and cap.
35 steelracks
1—30 HP Cleaver Brooks Boiler 100 psi
1—40' bucket elevator frame
1—200 amp Lincoln Welder
1—Cutting torch
1—20' belt (14") conveyor
1000—¼" x 18" x 20" steel Pallets
Above equipment approximately four months old. Price $21,000 complete for above
5—Ford trucks, 1050 Models, F-7, 170½" wheel base with Jaeger truck mixers, 1950 Model, 5 cu. yds. $3,000 each.

Located at or near Richmond, Va.

P. O. Box 9138
Richmond 27, Va.
Phone Richmond 5-7491

DON'T WAIT
WF-H BEAMS
PILE SECTIONS
NEW · USED · IN STOCK

8"	BP	36#
10"	BP	42#
12"	BP	53#
14"	BP	73#
14"	BP	89#
14"	BP	102#
14"	BP	117#

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

Call HY DRACHMAN
STEEL CORPORATION
52-25 2nd Street
Long Island City, N. Y.
Phone: RAvenswood 9-1262

BARGAIN
MARION 43M S/N 9389
1 YD BACKHOE
PERFECT COND.
RYAN EQUIPMENT CO.
3350 Morganford — St. Louis, Mo.
PR-1-0292

FOR SALE
48B Bucyrus Erie Shovel diesel 2 cy
10,000' 9" x 9" road forms
1,550' 6" x 6" road forms*
2,500' 16" x 12" airport forms*
*Used four months only
WILLIAMS CONSTRUCTION COMPANY
Box 5045 Balto. 20, Md. — Murdock 6-6600

FOR SALE OR RENT
1—1 yd Northwest Model 41 Diesel Crane
1—25 ton Bay City Truck Crane.
2—30 ton Gasoline and Diesel Locomotive Cranes.
1—44 ton G.E. Diesel Electric Locomotive.
1—100 ton G.E. Diesel Electric Locomotive.
B. M. WEISS COMPANY
Girard Trust Bldg. — Phila., Pa.

PIPE
Surplus New & Used
FOR SALE

PILING · PILE FITTINGS · PIPE
CULVERTS · VALVES & FITTINGS
SPECIALISTS IN PRE-FAB. PIPING
ap ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13 Sts., B'klyn, N. Y.
ALBERT PIPE SUPPLY APS

EST. 1904
DAVIDSON
PIPE COMPANY INC.
One Of The Largest Stocks In The East
Seamless and Welded ⅛" to 30" O.D. All wall thicknesses Manufactured. Specialty large sizes. Cutting — Threading — Flanging — Fittings — Valves.
Call GEdney 9-6300
50th St. & 2nd Ave., — B'klyn 32, N. Y.

GLOBE PIPE & FITTING CO.
VALVES FITTINGS NEW PIPE USED FOR ALL PURPOSES
785 Metropolitan Ave., Brooklyn 11, N. Y.
EVergreen 7-6220

NEW! FREE CATALOG
Fall '57

60 VALUE-PACKED PAGES
NOW AVAILABLE
Chuck-Full of Unsurpassed WAR SURPLUS and Newly Manufactured Equipment Bargains Including—
GENERATORS—PUMPS—HYDRAULICS, Etc., for Farm, Home, Factory, Workshop.
Write Today.
GROBAN SUPPLY CO. Dept. 24
1139 S. Wabash Ave., Chicago 5, Ill.

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

Save on Your INDUSTRIAL TRACK

FOSTER QUALITY — FULLY GUARANTEED
RELAYING RAILS
Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.
SEND FOR CATALOGS
RAILS · TRACK EQUIPMENT · PIPE · PILING
L. B. FOSTER CO.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

Slightly Used
80D Northwest Double Stick Shovel Attachment
Excellent Condition
HODGE & HAMMOND, INC.
720 Garrison Ave., New York 59, N. Y.
Phone—Kilpatrick 2-2400

FOR SALE
Two (200) pcs. H BEAMS (BP)
57 lbs., 45 to 65 ft. long
Location: Baltimore, Md.
R. S. STEVENSON CO.
6301 Blackburn Court — Balto. 12, Md.
Tel. Idlewood 5-8053

RAILS
NEW — RELAYING — TRACK ACCESSORIES
MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W. VA.
IMMEDIATE DELIVERY

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on following pages

NEW ENGLAND

Goodkind & O'Dea

Consulting Engineers

Design and Supervision
Foundations, Structures, Highways
1214 Dixwell Ave. Hamden, Conn.
610 Bloomfield Ave., Bloomfield, N. J.
325 Spring Street, New York 7, N. Y.
7956 Oakton St. Chicago 31, Ill.

The Clarkeson Engineering Co., Inc.

Engineers and Consultants

Bridges and Highways
Expressways
Investigations and Reports
Supervision of Construction
Traffic and Parking Studies
Waterfront Facilities

285 Columbus Avenue, Boston 16, Mass.
Suite 200, 2000 P St. NW, Wash. 6, D. C.

Fay, Spofford & Thorndike, Inc.

Engineers

Airports, Bridges, Turnpikes
Water Supply, Sewerage and Drainage
Port and Terminal Works
Industrial Buildings

Designs Investigations
Supervision of Construction

Boston, Massachusetts

Jackson & Moreland, Inc.

Engineers and Consultants

Design and Supervision of Construction

Reports — Examinations — Appraisals

Machine Design—Technical Publications
Boston New York

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants—Electrical, Steam and Hydraulic Engineering—Investigations, Reports, and Appraisals.

Boston, Mass. Charlotte, N. C.

Metcalf & Eddy

ENGINEERS

Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

Moore Survey & Mapping Corp

Engineers *Surveyors*

Aerial surveys, Ground surveys, Geodetic Control, Hydrographic surveys, Construction surveys, Tax Maps.
11 Maple Ave. Shrewsbury, Mass.

C. W. Riva Co.

Engineers

Edgar P. Snow Robert C. Barker
John F. Westman John H. Grasso

Highways, Bridges, Tunnels, Airports, Foundations, Sewerage, Water Supply.

511 Westminster St., Providence 3, R. I.

MIDDLE ATLANTIC

Airways Engineering Corp.

Airports, highways, dams, fuel storage, pipe lines, aerial topographic mapping.
1212 - 18th St., N.W.,
Washington 6, D. C.
Phone: REpublic 7-8181

Ewin Engineering Corp.

Designers of Port Facilities, Foundations, Industrial Plants, Bridges, Highways, Sewage Disposal and Municipal Projects.
1367 Connecticut Ave. N.W. Washington, D. C.
Miami, Florida Mobile, Alabama

Green Associates, Inc.

Consulting Engineers

Civil, Mechanical, Electrical

220 E Pleasant St., Baltimore, Md.
Pittsburgh, Pa. Boston, Mass.

Penniman & Browne, Inc.

Engineering Division

Soils Engineering—Test Borings Load Testing—Asphalt & Concrete Design—Field and Plant Control Steel Inspection—Mobile X-Ray
341 St. Paul Place, Baltimore 2, Md.

Whitman, Requardt & Associates

Engineers—Consultants

Civil—Sanitary—Structural
Mechanical—Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul St., Baltimore 2, Md.

Maddox and Hopkins

Engineers and Surveyors

Plane and Geodetic Surveys
Topographic Maps - Photogrammetry

Highways, Utilities, Structures
8506 Dixon Ave., Silver Springs, Md.

Fort Lee Construction Co.

Engineers and Constructors

Design and erection, commercial and industrial, reinforced concrete, structural steel and timber. More than 25 years continuous successful experience.

Main Office: 248 Main Street, Fort Lee New Jersey. Telephone Windsor—4-7864

Louis Berger & Associates

Consulting Engineers

Studies, Design and Supervision
Highways—Structures
Airfields—Foundations

177 Oakwood Avenue Orange, N. J.
2nd & Locust Streets Harrisburg, Pa.
Baltimore, Maryland

Greer Engineering Associates

SOIL MECHANICS

Foundation Designs and Analyses
Airphoto Soils and Geological Mapping
Field and Laboratory Soil Tests

98 Greenwood Ave. Montclair, N. J.

Joseph S. Ward

Consulting Soil and Foundation Engineer

Site Investigation, Laboratory Soil Testing, Foundation Analysis, Highways, Airports, Engineering Reports and Consultation.
605 Valley Rd., Upper Montclair, N. J.

Edwards, Kelcey & Beck

Consulting Engineers

Reports, Design, Supervision
Subways, Expressways, Traffic, Parking
Harbor Works, Bridges, Tunnels
Housing and Industrial Developments
Newark, New Jersey
New York Philadelphia Boston

Porter, Urquhart, McCreary & O'Brien

O. J. Porter & Co.

CONSULTING ENGINEERS

Airports — Highways — Expressways — Buildings — Bridges — Dams — Harbors — Foundations — Stabilization — Pavements
Reports, Designs & Supervision

415 Frelinghuysen Ave., Newark 5, N.J.
625 Eighth Avenue, New York 18, N.Y.
3568 W. Third St., Los Angeles 5, Cal.
1140 Howard St., San Francisco 3, Cal.
516 Ninth Street, Sacramento 14, Cal.

Boswell Engineering Co.

Founded 1925

Ridgefield Park N. J. Trenton N. J.

Design Reports Investigations
Surveys Const. Supervision
Highways Bridges Airports

REMEMBER!!

You can depend on these consultants for a fast accurate solution to your problems. Consult them when necessary.

Frank E. Harley and Associates

Consulting Engineers

Design, Surveys, Plans and Construction Highways, Sewerage and Sewage Treatment, Water Supply and Purification, Municipal Problems.
Harley Bldg., 240 Godwin, Wyckoff, N. J.

B. K. Hough

Consulting Engineer
Soils & Foundation Engineering

Site investigations, soil testing, design analysis for earthworks, foundations and pavements, field inspection, engineering reports, consultation.
121 E. Seneca St., Ithaca, New York

Ammann & Whitney

Consulting Engineers

Design and Supervision of Construction of Bridges, Highways, Expressways, Buildings, Special Structures, Airport Facilities.
111 Eighth Ave., New York 11, N. Y.
734 E. Mason St., Milwaukee 2, Wisc.

Barker & Wheeler

Water Supply — Utility and Industrial
Sewerage — Industrial
Sewage Disposal — Valuations
Power Systems — Reports

New York City, 11 Park Place
Albany, N. Y., 36 State St.

Barstow, Mulligan & Vollmer

Engineers

Surveys, Design & Construction Supervision, Highways, Expressways, Parks
Movable and long span bridges
Prestressed Structures — City
Planning and Municipal Engineering
49 W. 45 St. New York 36 N. Y.

Begert and Childs

Consulting Engineers

Clinton L. Bogert Fred S. Childs
Ivan L. Bogert Donald M. Ditmars
Robert A. Lincoln Charles A. Manganaro
William Martin

Water & Sewage Works Refuse Disposal
Drainage Flood Control
Highways & Bridges Airfields
145 E. 32nd St. New York 16, N. Y.

Bowe, Albertson & Associates

Engineers

Sewage and Water Works — Industrial Wastes — Refuse Disposal — Municipal Projects — Industrial Buildings — Reports — Plans — Specifications — Supervision of Construction and Operation — Valuations — Laboratory Service
75 West Street New York 6, New York

Brown & Blauvelt

CONSULTING ENGINEERS

Expressways, Highways, Parkways
Airports, Bridges, Dams, Water Supply

Industrial and Chemical Plants
Sewage Disposal

Preliminary Reports, Engineering Design, Construction Supervision

488 Fourth Ave., New York 16, N. Y.

Buck, Seifert and Jost

Consulting Engineers

Water Supply — Sewerage — Hydraulic Developments—Reports and Valuations.
Chemical and Biological Laboratories.
New York City, 113 E. 19th St.

Cotton, Pierce, Streander, Inc.

Associated Engineering Consultants

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Refuse Disposal, Trade Wastes
Power Plants
Reports, Plans, Supervision

133 Nassau St., New York, N. Y.
55 Carolina Road, Gowanda, N. Y.
2718 Garfield St., Hollywood, Fla.
Colon 106, Havana, Cuba.

Hazen and Sawyer *Engineers*

Water and Sewerage Works
Industrial Waste Disposal
Drainage and Flood Control
Reports, Design, Supervision of Construction and Operation
Appraisals and Rates
122 East 42nd St. 3333 Book Tower
New York 17, N. Y. Detroit 26, Mich.

Ebasco Services Inc.

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS

Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering
Appraisal

Two Rector Street New York
209 S. LaSalle Street Chic. 4, Ill.
204 Southland Life Bldg. Dallas 1, Texas
611 Equitable Bldg. Portland 4, Ore.
1625 Eye Street, N.W. Wash. 4, D. C.

Freyssinet Company, Inc.

ENGINEERS

Structural Design • Supervision
Reports • Bridges • Buildings
Waterfront Structures

62 William Street
New York, N. Y.

Hardesty & Hanover

Consulting Engineers

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Expressways and Thruways
Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

Reports • Feasibility Studies • Evaluations • Designs • Port Development
Foundations • Highways and Bridges
Shipyards • Marine Structures • Floating Dry Docks • Graving Docks • Bulkheads • Piers • Wharves • Power Plants • Industrial Buildings

27 William Street, New York 5, N. Y.
1915 Tulane Avenue, New Orleans, La.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations, Express Highways
Administrative Services
1805 Grand Ave., 99 Church St.
Kansas City 8, Mo., New York 7, N. Y.

Hunting Technical Services

Natural Resources Consultants

Geological and soils surveys for engineering, irrigation, agricultural mineral & oil projects in U.S.A. and overseas. Aerial photography, topo. mapping
57 Park Ave., New York 16, N. Y.
London Baghdad Caracas
Johannesburg Sydney Toronto

King & Gavaris

CONSULTING ENGINEERS

Bridges, Highways, Toll Roads
Arterials - Foundations
Reports, Investigations, Surveys
Supervision of Construction

436 Lexington Ave. 18 Mix Ave.
New York West Haven, Conn.

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

612 Fifth Ave. New York 19, N. Y.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on preceding and following pages

Moran, Proctor Mueser & Rutledge

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

415 Madison Ave., New York 17, N. Y.
Eldorado 5-4800

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic Parking and Transportation Reports. Power, Industrial Buildings, Housing, Sewerage and Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Malcolm Pirnie — Ernest W. Whitlock
Robert D. Mitchell — Carl A. Arenander
Malcolm Pirnie, Jr.

MUNICIPAL & INDUSTRIAL

Water Supply - Water Treatment

Sewage and Waste Treatment

Drainage - Sewerage - Refuse Disposal

25 West 43rd St., New York 36, N. Y.

The Pitometer Associates

Engineers
Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Water Measurements & Special Hydraulic Investigations

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Waste, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts Assoc.

Weston Gavett - Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals

30 Church Street, New York 7

Praeger-Kavanagh

Engineers

136 East 39th St., New York 16, N. Y.

Roos and Snow

Consulting Engineers

Reports, Design and Supervision
Highways, Expressways & Structures

144 East 30 Street—New York, N. Y.
Providence, R. I.—Binghamton, N. Y.

Sanderson & Porter

Construction Reports — Surveys

New York — New York

Scheidenhelm, F. W.

Consulting Engineers

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye Stevenson Value & Knecht

Consulting Engineers

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Railroads, Piers, Industrial Plants, Reinforced Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies, Real Estate Development

Civil — Mechanical — Electrical

101 Park Avenue New York 17, N. Y.

Severud-Elstad-Krueger-Associates

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Ave., New York 17, N.Y.

Singstad & Baillie

Consulting Engineers

Ole Singstad — David G. Baillie, Jr.

Tunnels, Subways, Highways
Foundations, Parking Garages

34 State St. — New York 4, N. Y.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7

Havana, Cuba — Lima, Peru
Bogota, Colombia, Caracas, Venezuela

D. B. Steinman

Consulting Engineer

BRIDGES
HIGHWAYS

Design, Construction
Strengthening, Investigations.
Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Henry W. Taylor

Consulting Engineer

Water Supply, Sewerage
Refuse Disposal, Incineration
Industrial Developments

151 W. Merrick Rd., Freeport, N. Y.

Tippetts-Abbett-McCarthy-Stratton

Engineers

Ports, Harbors, Flood Control, Power Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

82 West 47th Street, New York City

The J. G. White Engineering Corporation

Design — Construction
Reports — Appraisals

80 Broad Street, New York

Lev Zetlin

CONSULTING ENGINEER

Design and Supervision of Special Structures, Hangers, Auditoriums, Industrial Plants, Hospitals.

Engineering Consultations and Reports on Special Structural Problems.

1265 Broadway — New York 1, N. Y.

Keis & Holroyd

Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings.

Troy, N. Y. — Ft. Lauderdale, Fla.

Frederic A. Nassaux

Consulting Engineer

Prestressed Concrete—Reinforced Conc.
Structural Steel.
Buildings, Bridges, Structures.
Precast & Prestressed Conc. Man. Plants
Design & Supervision

R. 226 Trust Bldg., Chambersburg, Pa.

Capitol Engineering Corporation

Engineers—Constructors—Management
Bridges — Dams
Planning — Airports
Sewage Systems — Water Works
Design and Surveys — Roads & Streets
Executive Offices, Dillsburg, Penna.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports
Traffic & Parking — Appraisals, Investigations & Reports.

Harrisburg, Penna.

Branch Offices
Pittsburgh, Pa. — Philadelphia, Pa.
Daytona Beach, Fla.

Robert W. Lowry, Inc.

Consulting Engineers
Robert W. Lowry — M. Lepkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Stress Analysis & Strengthening
227 Pine Street, Harrisburg, Pa.
122 E. 42nd Street, N. Y., N. Y.

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highways and Expressways

State Street Bldg., Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Aero Service Corporation

Aerial topographic maps — photo-maps for engineering projects anywhere in the world—highways, railroads, cities, power and pipe lines, mining development. Soil studies and electronic surveys of large areas; resources inventories.
210 E. Courtland — Philadelphia 20

Albright & Friel Inc.

Consulting Engineers
Water, Sewage, Industrial Wastes and Incineration Problems, City Planning, Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings, Investigations, Reports, Appraisals and Rates, Laboratory.
3 Penn Center Plaza — Phila. 2, Penn.

Fridy, Gauker, Truscott & Fridy, Inc.

Architects & Engineers

Water, Sewer, Waste Disposal, Roads, Airports, Power & Lighting, Petroleum Facilities, Hospitals, Schools, Public & Industrial Buildings, Reports, Plans, Supervision, Appraisals.
1321 Arch St. — Philadelphia 7, Pa.

Harris-Dechant Associates

Frederick H. Dechant
Consulting Engineer

Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Natural Gas Transmission and Distribution.

123 So. Broad St., Philadelphia 9, Pa.

Justin & Courtney

Consulting Engineers

Joel B. Justin - Neville C. Courtney
Dams and Power Problems, Hydroelectric, River Basin Developments, Water Supply, Foundations

121 South Broad Street
Philadelphia 7, Pa.

The Kuljian Corporation

Engineers • Consultants • Contractors

Power Plants, Airports & Facilities, Highways, Industrial Plants, Water & Sewage Works, Pumping Stations, Flood Control, Irrigation.

1300 N. Broad St., — Phila. 21, Pa.

Yule, Sticklen, Jordan & McNee

ENGINEERS

Bridges, Highways, Airports
Design, Investigations, Reports
Supervision of Construction
Civil, Structural, Mechanical & Electrical

309 South Broad St., Philadelphia 7, Pa.
23rd & Market Sts., Camp Hill, Pa.
5564 North High St., Columbus, Ohio

American Air Surveys, Inc.

TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile inventories

907 Penn Ave. — Pittsburgh 22, Pa.

Hunting, Larsen & Dunnells, *Engineers*

Industrial Plants — Warehouses, Office and Commercial Buildings, Steel and Reinforced Concrete. Design and Supervision. Reports.

1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles Inc.

Engineers

Water Supply and Purification Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

Pittsburgh, Pa.

Peter F. Loftus Corporation

Design and Consulting Engineers

Electrical • Mechanical • Structural
Civil • Thermodynamic • Architectural

First National Bank Building
Pittsburgh 22, Pennsylvania

Sanders & Thomas, Inc.

Consulting & Contracting Engineers
Civil Structural Sanitary
Mechanical Electrical
Reports Plans, Supervision Construction

POTTSTOWN, PA. — Reading, Pa.
Philadelphia, Pa. — Washington, D. C.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.

Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

Main Office
221 W. Olive Street, Scranton, Pa.

Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa.
1248 Church St., Decatur, Ga.
Box 645—Grand Junction, Colorado
Buchans, Newfoundland

Frank D. McEnteer

Consulting Engineer

Bridges, Highways, Airports, Industrial Plants. Design, Surveys, Investigations.

844 Baltimore Ave., Clarksburg, W. Va.

SOUTH

Harry Hendon and Associates

ENGINEERS
(Formerly Polk, Powell and Hendon)
Harry H. Hendon — L. E. Hoffmann
A. B. Jowers
Civil Engineers—Public Utilities

10 Office Park Circle, Mountain Brook
Birmingham 9, Alabama

CHECK this section whenever you need professional advice.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on preceding and following pages

Palmer and Baker Engineers, Inc.

Consulting Engineers - Architects

Surveys-Reports-Design-Supervision
Consultation

Transportation and Traffic Problems
Tunnels-Bridges-Highways-Airports
Industrial Buildings
Waterfront and Harbor Structures
Graving and Floating Dry Docks
Complete Soils, Materials and Chemical Laboratories

Mobile, Ala. — New Orleans, La.
Washington, D. C.

Dignum and Associates

ENGINEERS

Civil — Electrical
Structural — Mechanical

260 Palermo Avenue
Coral Gables 34, Florida

Rader and Associates

Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings Industrial Plants Reports Investigations Consultations.

111 N.E. 2nd Ave. Miami 32 Florida

Duval Engineering & Contracting Co.

General Contractors

FOUNDATION BORINGS
For Engineers and Architects.

Jacksonville — Florida

Law-Barrow-Agee Laboratories, Inc.

Soils Engineers & Consultants

Soil Testing — Soil Boring — Rock Drilling—Load Testing—Field Control —Engineering Studies—Chemical Analysis—Physical Testing

Box 1558 Atlanta 1 Ga.
Serving the entire South

Patchen and Zimmerman Engineers

Bridges, Expressways, Dams, Hydro and Steam Power, Chemical, Process and Industrial Plants, Water Supply and Sewage Treatment, Investigations, Reports, Design, Supervision.

Augusta, Georgia — Atlanta, Georgia

Engineers Testing Laboratory, Inc.

Soil Mechanics and Foundation Engineering

Soil Borings — Laboratory Tests
Foundation Analyses — Reports

2116 Canada Dry St. Houston 23, Texas
444 North 9th St. Baton Rouge, La.

Eustis Engineering Company

FOUNDATION AND SOIL
MECHANICS INVESTIGATIONS

Soil Borings — *Laboratory Test*
Foundation Analyses — *Reports*

3635 Airline Highway
Metairie, Louisiana

Southern Mapping & Engineering Company

Planners and Surveyors:
Airports, Highway, Water, Sewage, Topography, Reports, Investigations, Pipe Line Surveys, Acquisition of Right-of-way.

216 Commerce Pl., Greensboro, N. C.

Schmidt Engineering Co.

Consulting Engineer

Investigations, Reports, Designs, Supervision Heavy Construction—Dams and Hydroelectric Projects—Foundation Explorations and Treatment—Water and Sewerage Works—Bridges & Highways

817 Broad St. — Chattanooga 2, Tenn.

ALWAYS READY

Yes, these consultants are always ready to help you with any problem concerning engineered construction. Call on them with the assurance that you will be receiving the finest of professional advice.

MIDDLE WEST

Alvord, Burdick & Howson

CONSULTING ENGINEERS

Water Works — Sewerage
Water Purification — Sewage Treatment
Flood Relief — Power Generation
Drainage — Appraisals

20 North Wacker Drive, Chicago

A. J. Boynton & Co.

ENGINEERS

Fixed and Movable Bridges
Structures
Foundations
Design
Construction

111 N. Wabash Ave., Chicago 2.

Ralph H. Burke, Inc.

CONSULTING ENGINEERS

Complete Architectural and Engineering Services
Plans, Supervision, and Reports

Expressways - Grade Separations
Traffic Studies - Parking Structures
Underground Garages - Shore Protection
Parks - Field Houses - Municipal Works
Airports and Air Terminal Buildings

20 North Wacker Drive, Chicago 6, Ill.

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.

360 East Grand Ave., Chicago 11, Ill.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Public Transit — Subways
Traffic & Parking — Railroad Facilities
Expressways — Industrial Plants
Grade Separations — Municipal Works
Urban Renewal — Port Development

150 North Wacker Drive, Chicago 6
San Francisco Toronto Oklahoma City

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal

220 S. State Stret, Chicago 4

Harza Engineering Co.

Consulting Engineers

Calvin V. Davis — E. Montford Fuelk
Richard D. Harza

Hydroelectric Plants & Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development

400 West Madison Street — Chicago 6

Hazelet & Erdal

CONSULTING ENGINEERS

Fixed Bridges, Movable Bridges, Industrial Plants, Expressways, Airports, Dams

Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Commerce Bldg., Louisville 2, Ky.

CHECK
this section whenever you need professional advice.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - Hydraulic - - Gas
Public Utilities - - Industrials

231 So. La Salle St. — Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Mobile Drilling & Engineering Inc.

Foundation Engineering & Testing Division—Contract Drilling Division

Foundation Investigation, Analysis & Design—Earth Dam & Embankment Design—Pavement Design—Compaction Control—Soil Sampling & Testing—Core Drilling.

960 N. Penn. Ave., Indianapolis 4, Ind.

Chas. W. Cole & Son

Engineers - Architects

Sewerage, Water Supply, Bridges, Highways, Toll Roads, Industrial, Municipal and Commercial Buildings

220 W. LaSalle Ave., Central 4-0137
South Bend, Indiana

Westville Engineering Company, Inc.

ENGINEERS AND GEOLOGISTS

Foundation Test Bornings, Soil Sampling, Rock Coring, Engineering Geology Surveys—Soil Mechanics, Concrete and Bituminous Laboratory—Field Surveys of Construction Materials—Consultants on Arbitration Matters Concerning Soil Mechanics, Concrete and Bituminous Technology

Francisco J. Cordova, P.E.
President and Chief Engineer
P. O. Box 67 — Westville, Indiana

The Hinchman Corporation

Consulting Engineers

CORROSION CONTROL
Surveys—Designs—Specifications

Francis Palms Building
Detroit 1, Michigan

J. Stephen Watkins

Consulting Engineers

Highways—Bridges
Water Supply—Sewerage
Industrial Plants

251 E. High St., Lexington, Kentucky
4726 Preston Highway, Louisville, Ky.
533 N. Clippert St., Lansing, Michigan

The Austin Company

Design and Construction
Manufacturing and Process Plants
Newspaper and Broadcasting Bldgs.
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Merchandising Bldgs. & Facilities
Plant Location Surveys

New York — CLEVELAND — Los Angeles
Chicago — Houston — Oakland
Detroit — Seattle

Havens and Emerson

W. L. Havens — A. A. Burger
J. W. Avery — H. H. Moseley
F. S. Falcosay — E. S. Ordway
F. C. Tolles, Consultant

Water, Sewerage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. — Woolworth Bldg.
Cleveland 14 — New York 7

The Osborn Engineering Co.

DESIGNING-CONSULTING

Industrial Plants — Office Buildings
Stadiums — Grand Stands — Field Houses
Bridges — Garages — Laboratories

7016 Euclid Ave. — Cleveland 3, Ohio

Photronix, Inc.

offering an integrated process of Aerial Photogrammetry & Electronic Computation

For Engineers, By Engineers

790 King Ave. — Columbus 12, Ohio

Jones, Henry & Williams

Consulting Sanitary Engineers

Water Works, Sewerage & Treatment
Waste Disposal
Security Building — Toledo 4, Ohio

Toledo Testing Laboratory

Engineers—Chemists

Concrete—Soils—Asphalt
Inspection — Research
Tests — Development

Foundation Investigation
Borings—Diamond Drilling
Load Tests
Soils Mechanics Laboratory

1810 North 12th St. — Toledo 2, Ohio

WEST OF MISSISSIPPI

Heron Engineering Co.

Consulting Engineers

For all types of Aerial Tramways, Cableways, and Suspended Structures

2000 South Acoma St.
Denver 10, Colorado

The Geophoto Group

Airphoto Interpretation Specialists

Soils and Engineering Geology, Petroleum, Mining, Hydrology, Site Selection, all types Natural Resources evaluations. World-wide activities.

E. & C. Bldg. — Examiner Bldg.
Denver, Colorado — Calgary, Alta.

Stanley Engineering Company

Consulting Engineers

Hershey Building — 208 S. LaSalle St.
Muscatine Ia. — Chicago 4, Ill.

Black & Veatch

Consulting Engineers

Water - Sewage - Electricity - Industry
Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

1500 Meadow Lake Parkway
Kansas City 14, Missouri

Burns & McDonnell

Engineers—Architects—Consultants

Kansas City, Missouri — Phone
P. O. Box 7088 — DElmar 3-4275

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou

E. M. Newman — F. M. Cortelyou, Jr.

Movable and Fixed Bridges of All Types, Foundation, and Related Structures.

1004 Baltimore — Kansas City 5, Mo.

The Consulting Engineer

By reason of special training, wide experience and tested ability, coupled with professional integrity, the consulting engineer brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on preceding pages

Russell and Axon

Consulting Engineers

Civil — Sanitary — Structural
Industrial — Electrical
Rate Investigations

408 Olive St. St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

Sverdrup & Parcel, Inc.

Engineers—Architects

Bridges, Structures and Reports,
Industrial and Power Plant Engineering

915 Olive St., St. Louis 1, Mo.
417 Montgomery St., San Francisco, Calif.

Benham Engineering Company

Established in 1909

Design and Consulting Engineers

215 N E 23rd Street
Oklahoma City 5, Oklahoma

Lockwood, Andrews & Newnam

Consulting Engineers

Navigation Facilities — Public Works
Airports — Earthworks — Roads,
Structual, Mechanical — Electrical
Reports — Design — Supervision
Surveys — Valuations
Corpus Christi — Houston — Victoria, Texas

McClelland Engineers, Inc.

Soil & Foundation Consultants

Investigations—Reports—Supervision
Borings & Tests

2639 N. Main Houston 9, Tex.

National Soil Services

Consulting Engineers

Soils, Foundations, Ground-water
Ralph F. Reuss Ray E. Hurst
Soil Borings Laboratory Tests
Foundation Analyses and Reports
Groundwater Exploration and Evaluation
4902 Gulf Houston, Texas

FAR WEST

International Engineering Company, Inc.

ENGINEERS

Investigations - Reports - Design
Procurement - Field Engineering
Domestic and Foreign
74 New Montgomery St.
San Francisco 5, California

Woodward, Clyde and Associates

Consulting Civil Engineers

Soil and Foundation Engineering; Earth Dams; Engineering Geology; Highway and Airport Pavement Design
1150 28th Street, Oakland, California
1240 West Bayaud, Denver, Colorado
310, V F W Bldg., Kansas City, Mo.
4815 Dodge Street, Omaha, Nebraska

CANADA

T. O. Lazarides, Lount and Partners

Consulting Engineers

Reports—Design—Construction Supervision Structures and Foundations
Special Analyses
Grids, shells, domes, complex design problems, bridges
209 Davenport Rd., Toronto, Canada

FOREIGN

Saenz-Cancio-Martin,

Ingenieros

Design and Supervision
Structural, Topographic, Soils and Hydraulic Engineering.

Ave. de la Independencia 774
Ensanche del Vedado Habana, Cuba

The Foundation Engineering Company of Puerto Rico

Consulting Engineers

Foundation and Soil Mechanics Investigations, Laboratory analyses, reports and recommendations, design of structures, supervision.
P. O. Box 821, San Juan, Puerto Rico

INSPECTION & TEST

A. W. Williams Inspection Co.

Established 1921—Member A.C.I.L.

Inspection — Testing — Analyses — Supervision. Foundation Investigations, Soil Borings, Soil Mechanics, Concrete and Asphalt Design and Control, Radiography, Sampling, Calibrations, Timber and timber treatment inspections. Complete testing laboratory service.
Main Office: 208 Virginia St., Mobile, Ala.

Richardson X-Ray Service

a corporation

Field X-ray, Gamma ray Inspection of Penstocks, Pipelines and related welded structures

World Wide Service

617 S. Raymond Ave, Alhambra, Calif.
Cu 3-1167

Robert W. Hunt Company

Inspection and Testing of
Engineering Materials & Equipment

New York • Chicago • San Francisco
and other Principal Cities

Consult these Specialists

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

The Haller Testing Laboratories, Inc.

140 Cedar St., N. Y. 6, N. Y.

Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges

Complete Soils Laboratory

Test Borings—Load Tests

New York, N. Y. Boston, Mass.
Plainfield, N. J. New Haven, Conn.

Johnson Soils Engineering Laboratory

Foundation Design - Highway & Airport Pavements - Construction Control - Load Tests - Shear & Consolidation Tests - MOBILE LABORATORIES
193 West Shore Ave., Bogata, N. J.
Bogata-Hubbard 7-4408

Pittsburgh Testing Laboratory

A national service with complete laboratory and inspection facilities.
Laboratories in principal cities.
Main Office: 1330 Locust St., Pittsburgh, Pa.

SURVEYORS

James L. Bell & Company

Surveyors

Surveying Crews Available For Any Location—Contract Or Per Diem Basis

KANSAS CITY
9125 W. 75th
Overland Park, Kansas

DENVER
1917 Broadway
Denver 2, Colorado

CHECK this section whenever you need professional advice.

SEARCHLIGHT SECTION

(Continued from page 90)

PILING

SURPLUS NEW and USED For Sale or Rent

We do a Nation-Wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

380 pcs. 60 ft Beth. DP-2—New York
292 pcs. 60 to 30 ft. Carn. M-116—Illinois
369 pcs. 60 to 50 ft. Beth.—ZP-32—Maryland
490 pcs. 42 ft. Carn. M-116—Louisiana
244 pcs. 35 ft. Carn. M116—Wisconsin
290 pcs. 35 to 15 ft. Beth. AP-3—Ohio
190 pcs. 25 ft. Beth. DP-2—Massachusetts
Other Lengths & Sections at Various Locations

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

H & STEEL SHEET PILING

400 PCS. CARNEGIE MZ32—60 FT.
2600 PCS. CARNEGIE MP101—60, 65 & 35 FT.
447 PCS. BETH. AP3—25 & 30, 40 & 60 FT.
416 PCS. BETH. DP2—31', 40' & 50'
366 PCS. BETH. ZP32—25', 36' & 48'
213 PCS. CARNEGIE MZ27—48 FT.
400 PCS. BP12—53 lb 55' to 60' H PILES

PILING BOUGHT—SOLD—RENTED
STOCKS N. Y.—MASS.—TEX.—OHIO—QUE.

15 x 24 PORTABLE CRUSHER

Model 15 A Diamond Crushing Plant, 15 x 24 Jaw Crusher, 30' x 8' Apron Feeder, Hopper 24" x 26' Conveyor, Gasoline Engine or Pneumatic Tires.

2A CEDAR RAPIDS CRUSHER

24 x 16 Rolls—3' x 8' Screen on Wheels, with gasoline engine and four belt conveyors.

R. C. STANHOPE, INC.
60 E. 42nd St N. Y. 17, N. Y.

NEW STEEL SHEET PILING

For Immediate Shipment

525 pcs. Belval Section BZ IV N50, 40' Lgths, 560 Net Tons. Location—Chicago. Reply

FS-5657, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

RENT STEEL SHEET PILING

Get the exact lengths and sections you need of all standard sections, delivered *on time*—and at Foster's usual low rental rates.

H BEARING PILE
PIPE FOR PILING
LIGHT-WEIGHT STEEL PILING
PILE HAMMERS & EXTRACTORS

L.B. FOSTER CO.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

STEEL SHEET PILING IN SOUTH
440 pcs. CARNEGIE MP 115—20', 25' & 40'
872 pcs. LARSSEN II 30' & 40' Lengths.
STOCKS NEW ORLEANS, TAMPA, JACKSONVILLE

DIESEL DRAGLINES
1 yd. MARION 43M—55 BOOM NEW 53
¾ yd. LIMA 34—55 —1 yd. BUCKETS

SEABOARD STEEL CORP.
4521 South Tamiami Trail Sarasota, Florida
Telephone Ringling 7-0461

ADVERTISERS IN THIS ISSUE

Acker Drill Co. 58
Acme Iron Works 95
Allis-Chalmers Mfg. Co. Tractor Div. 1
American Pipe & Construction Co. ..... 3rd Cov.
American Sisalkraft Corp. 59
American Steel & Wire Div. U. S. Steel Corp. 32
Armco Drainage & Metal Products, Inc. ..... 2nd Cov.
Automotive & Aircraft Div. Amer. Chain & Cable Co. 42
Austin Western Co. 79

Barber-Greene Co. 31
Bayley Co., The Wm. 44
Bethlehem Steel Co. 50
Borden Metal Products 20
Broderick & Bascom Rope Co. ..... 4th Cov.

Case Foundation Co. 14
Cities Service Oil Co. 66
Cleveland Trencher Co. 46
Columbia-Southern Chem. Corp. 53

Dietz, R. E., Co. 73
Douglas Fir Plywood Assn. 34, 35
Dravo Corp. 14, 69

Electrodata Div. Burroughs Corp. 4
Elgood Equipment Corp. 61
Euclid Div., G.M.C. 6-7

Fairbanks-Morse & Co. 3, 58
Ford Motor Co., Indust. & Engine Div. 48-49
Foster Co., L. B. 18

B. F. Goodrich Tire Co., Div. B. F. Goodrich 5
Griffin Wellpoint Corp. 54
Gunite Construction Corp. 61

Ideal Cement Co. 39
International Harvester Co. 10-11, 12-13

Kinnear Mfg. Co. 57

Laclede Steel Co. 60
Lefax Co. 70
Lock Joint Pipe Co. 16

Madesco Tackle Block Co. 70
Mall Tool Div. Remington Arms Co., Inc. 71
Masonite Corp. 63
McConnaughay, K. E. 30
McKiernan-Terry Corp. 70
Monsanto Chemical Co. 55

National Steel Corp. Stran Steel Div. Great Lakes Steel 47

Olin Film Div. Olin Mathieson Chem. Corp. 15
D. W. Onan & Sons, Inc. 56

Remington Arms Co., Inc. Ind. Tool Div. 9
Richmond Screw Anchor Co., Inc. 2

Skookum Co. 56
Spencer, White & Prentis, Inc. 38
Surco Int. Corp. 14

E. A. Thompson Co., Inc. 52
Travelers Insurance Co. 77
Twin Disc Clutch Co. 43

U. S. Steel Corp. 64
Universal Form Clamp Co. 29

Watts Co., Chas. 70
Williams Equipment & Supply Co. 54
Wrought Washer Mfg. Co. 8

Professional Services 91-94

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 85-88
Educational 88
Notices
Proposal 83-85
Equipment
(Used or Surplus New)
For Rent, Sales Wanted 88-90, 94

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member

Number of copies of this issue printed 78,771

D. S. ROBERTSON, Advertising Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES

New York 2—500 5th Ave.
C. D. Neulen, H. T. Olsen
J. C. White
Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley
San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn
Philadelphia, 3—17th and Sansome Sts.,
D. G. Jensen, D. L. Kates
Cleveland, 15—Hanna Bldg.,
F. P. DiToro, E. B. Mingle Jr.
Detroit, 28—Penobscot Bldg.,
J. A. Houghton
St. Louis, 8—Continental Bldg.,
B. F. Horn
Los Angeles, 17—1125 W. Sixth St.,
H. L. Keeler
Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Billian
Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
E. E. Schirmer
Pittsburgh, 22—1111 Oliver Bldg.
M. Russell
Denver, 2—1740 Broadway
J. W. Patten

OTHER SALES OFFICES:
Boston, 16—350 Park Square Bldg.,
London, McGraw-Hill House

INGRAM

SMOOTH REVERSING
ESPECIALLY SUITED FOR ASPHALT

NEW REVERSE-O-MATIC DRIVE MAKES INGRAM THE MOST PRACTICAL ROLLER YOU CAN USE

Acme IRON WORKS
P.O. BOX 2020 • SAN ANTONIO 6, TEXAS

Editorials

Error Partly Corrected

THE BUREAU OF PUBLIC ROADS acted wisely in withdrawing its support of "no raiding" clauses in contracts made between state highway departments and consulting engineering firms. Those states which resort to this method of "job freezing" should now take the next step and abandon the use of such clauses as an instrument of personnel policy.

Actually, it is quite doubtful if violation of the clause by a consultant who had signed a contract containing it would constitute grounds for rescinding the contract by the state anyway. The consultant could, of course, be denied future contracts, but such clubbing of consultants into submission is not the way to solve a troublesome problem.

The way to solve the problem is to adjust pay, working conditions, pension rights and other benefits so that the government employee will not be tempted to move. With the BPR's support withdrawn, it is now solely a state responsibility whether or not these job freezing clauses are used. It would be in the best interests of all concerned if they were dropped.

Engineering Incorporated

THE THORNY PROBLEM of whether and under what circumstances corporations shall be permitted to engage in the practice of engineering is apt to be with us for some years to come. It is therefore important that whenever a conscientious endeavor is made to solve it, the results or conclusions, if any, be carefully weighed.

Such an endeavor was that of a joint committee of the principal engineering societies in New York State, which wound up two years of meetings early this summer. Although its main objective—to draft a corporate enabling amendment to the state law covering the practice of professional engineering—was not attained, some areas of agreement were mapped out. And, since the committee membership was about equally divided between representatives of engineering corporations and of partnership or individual proprietorships, the agreed-to principles have a particular significance.

One of these principles, for example, states that "An engineering law is enactable only for the public benefit" (safeguard life, health and property) "and should be limited to that objective. Any benefit to the profession shall be incidental." The last statement, it may be noted, is at variance with the sometimes stated belief that one purpose of an engineering law is to guard the ethical practices of the profession, and even to perpetuate existing business practices.

In this connection, another of the agreed upon principles is apropos: "The practice of engineering cannot be fully controlled by legislation of governmental agencies, and effective regulation must stem from the profession itself." It is, of course, the fear (ungrounded in our opinion) that such regulation could not be effectively extended to corporations which is one of the stumbling blocks to permission for corporate engineering.

Actually corporations, in the true sense of the word, cannot "practice" engineering. What they can do is to offer the services of their licensed employees. A third principle agreed to nails this fact conclusively: "The license to practice engineering should be given only to natural persons who have qualified." A corporation cannot be licensed as such.

The real problem faced in permitting corporations to provide engineering service rests in the controls to be required to assure responsibility for their acts. The committee agreed that these controls would be adequate if the corporation were wholly owned, directed and operated by licensed engineers. It could not agree on any less restrictive form of control; yet the fact that the laws of more than thirty states work satisfactorially on much less complete control argues in favor of less stringent requirements.

All in all, the work of the New York joint committee advances the hope that sooner or later a solution to the corporate engineering problem will be found that will assure the necessary safeguards for the public and still maintain the professional standards that every engineer now cherishes.

A Worthwhile Goal

WHILE IT IS USUALLY MISLEADING to draw analogies between accomplishments of the engineering and legal professions, one recent attainment of a lawyers' group merits attention.

After a lengthy effort, the Association of the Bar of the City of New York has obtained "official sanction" from the New York County Democratic leaders to a policy of submitting the names of judicial candidates to the association for screening in advance of party nominating conventions.

Of course, for many years bar groups have had a lot to say about candidates for judgeships; the significant point here is that lawyers' evaluation of the professional competency of their colleagues has commanded such additional semi-official respect from the politicians.

Such respect appears to be a worthwhile goal for engineers' societies—and especially civil groups because of the public flavor of that profession. For example, candidates for such elective or politically appointive positions as state highway engineers, county and city public works commissioners and executive directors and chief engineers of public authorities could well be screened by appropriate civil engineer associations. Benefits would accrue to both the public and the profession.

precast reinforced concrete pipe with...

locked-in protection

T-Lock Amer-Plate liner provides unequaled protection against corrosive acids, salts and alkalies and has proved to be impervious to high concentrations of hydrogen sulfide sewer gas.

The criterion by which a product is inevitably judged is its acceptance by the consumer. The Los Angeles Board of Public Works has awarded contracts for Precast Reinforced Concrete pipe, protected by T-Lock Amer-Plate, for their large diameter main trunk sewer installations. Thus, this community can be assured of trouble free service, economical maintenance and maximum life in these lines.

The long recognized qualities of strength and durability in Precast Reinforced Concrete Pipe plus the added proven protection afforded by corrosion resistant T-Lock Amer-Plate are a sure guarantee of permanence and economy.

Specify T-Lock Amer-Plate for your municipal or industrial sewer system and be confident that you are choosing the best.

Flexible sheets fit straight or curved surfaces, corners, etc.

Extruded T's, ⅜" high, anchor lining in concrete

Concrete poured in form

.060" thick, with dark glossy surface

The Precast Reinforced Concrete Pipe shown being installed here has been poured with the tough, non-porous vinyl plastic liner, T-Lock Amer-Plate. In the manufacturing process the Amer-Plate is wrapped around the inner form so that when the concrete wall is poured the T-shaped flanges are locked into the pipe wall. An unbroken, smooth lining is established very simply by heat-welding the material to itself at the pipe joints.

"Our Fiftieth Year"

American PIPE AND CONSTRUCTION CO.

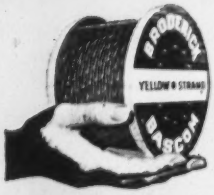
Mail address:
Box 3428 Terminal Annex
Los Angeles 54, Calif.

Main office and plant:
4635 Firestone Blvd., South Gate, Calif.
Phone LOrain 4-2511

District sales offices and plants:
Hayward and San Diego, Calif.
Portland, Ore. Phoenix, Ariz.

District sales representatives:
Seattle and Spokane, Wash.

Yellow Strand



. . . always on hand

A Specialist helps you select the wire rope best for your job

You can depend on your Yellow Strand distributor for recommending the right size and type of wire rope — and for ample stocks on hand.

He knows exactly the rope to best fit your equipment for greatest wire rope service. He maintains stocks of standard strength Yellow Strand, Yellow Strand "POWERSTEEL" and Yellow Strand Flattened Strand to promptly supply your needs.

Add to that the extra qualities of wear resistance, shock resistance and long life manufactured into Yellow Strand products and you have a hard-to-beat combination.

Wherever your job may be Yellow Strand is near at hand. Distributors and factory warehouses are located throughout the entire U.S.A. Call them for the service of an expert, and longer rope life.

Where you see Yellow Strand at work, you'll see wire rope records of long life and dependability. Steady, day after day performance proves Yellow Strand's toughness, ability to "take" shock and wear of heavy loads.

Yellow Strand®

BRODERICK & BASCOM ROPE CO.

Manufacturers of Wire Rope for over 80 Years

4203 Union Blvd. **St. Louis 15, Mo.**